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Preface

It is with great pleasure that we present Manorama Year Book 1987 to the discerning public. We are legitimately proud that we had to order a reprint of our 1986 edition because of pressing demand from the public.

In the current year we have introduced four new Special Features. 'Micro Computers: How To Buy The Right One' appears in the Science and Technology part. 'SAARC: No Bed Of Roses' is in Part Two — World Panorama. The Cover Feature 'Human Resource Development' has been added to Part Three — India and States. And Part Four — The World of Sports has the Special Feature on 'Seoul 86: A Rehearsal for Seoul 88.' All are written by experts in the respective fields.

Among the added attractions of the 1987 edition are exhaustive surveys of Indian Literature (including Indo-Anglian), Indian Music and Dance and Indian Painting and Sculpture. New features like ABC of Human Biology, Indians in the Guinness Book, Indians who won the Nobel Prize and Appraisal of New Economic Policy would, we hope, go a long way in catering to the needs of the growing generation of readers.

The most noteworthy change in the 22nd edition is the incorporation of a large number of photos and drawings. Thirty-two pages come in colour: World Maps and Tourist Spots in India. The tourist arrival in India has crossed one million and we hope that these photographs and the chapter on tourism will give an added impetus to the tourism planners and tourists.

It is gratifying that the print order for the present edition has surpassed all the previous records of any annual publication in India.

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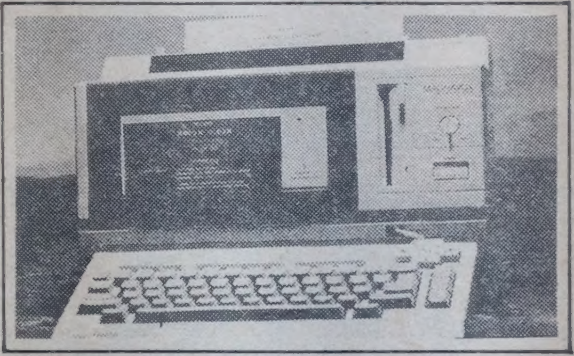

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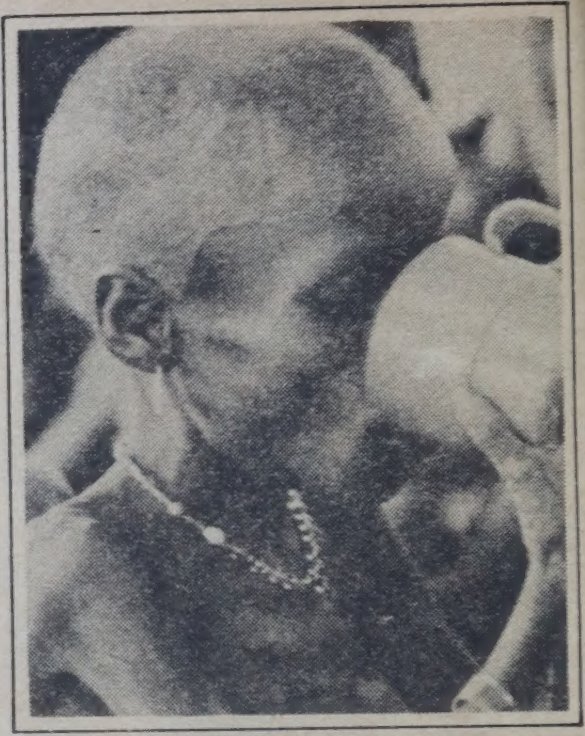

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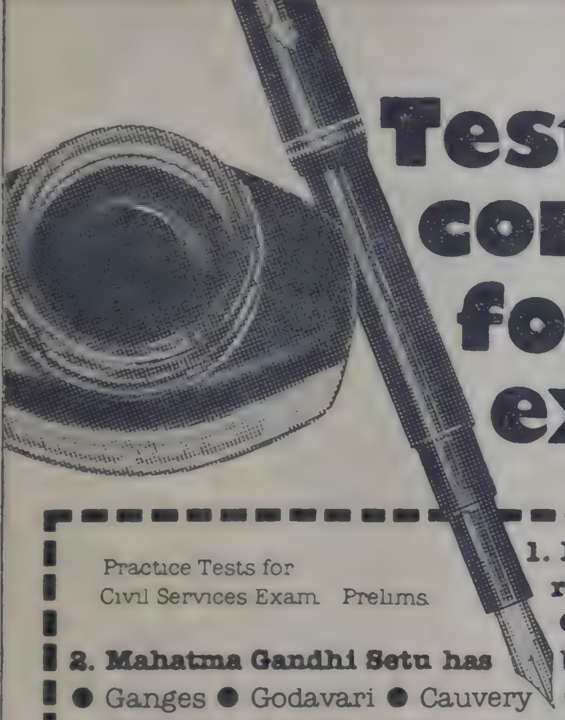

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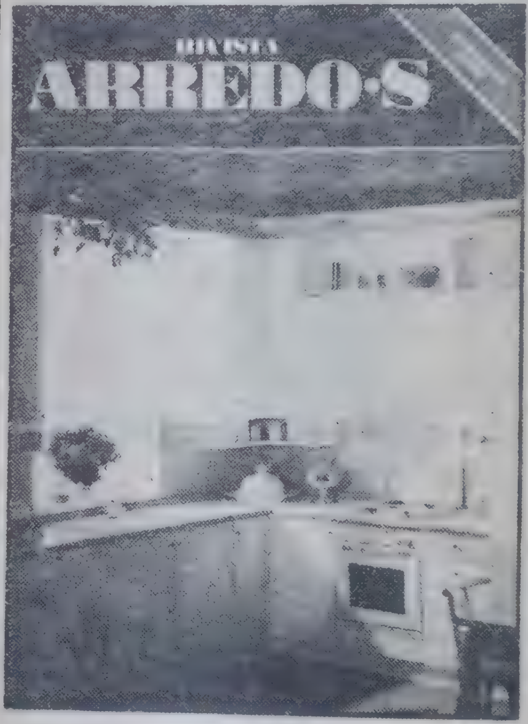
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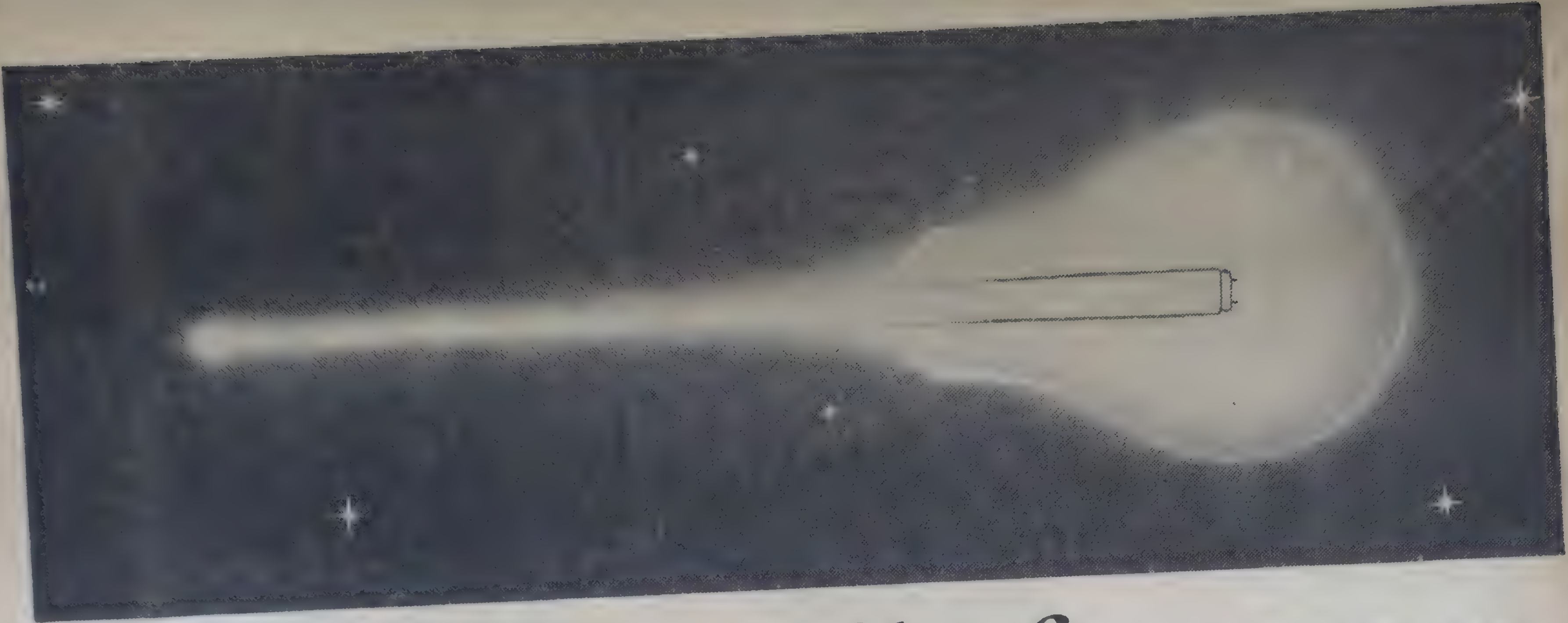

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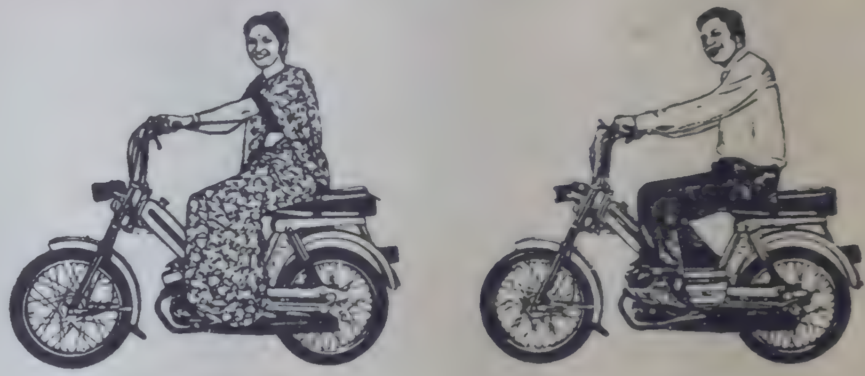

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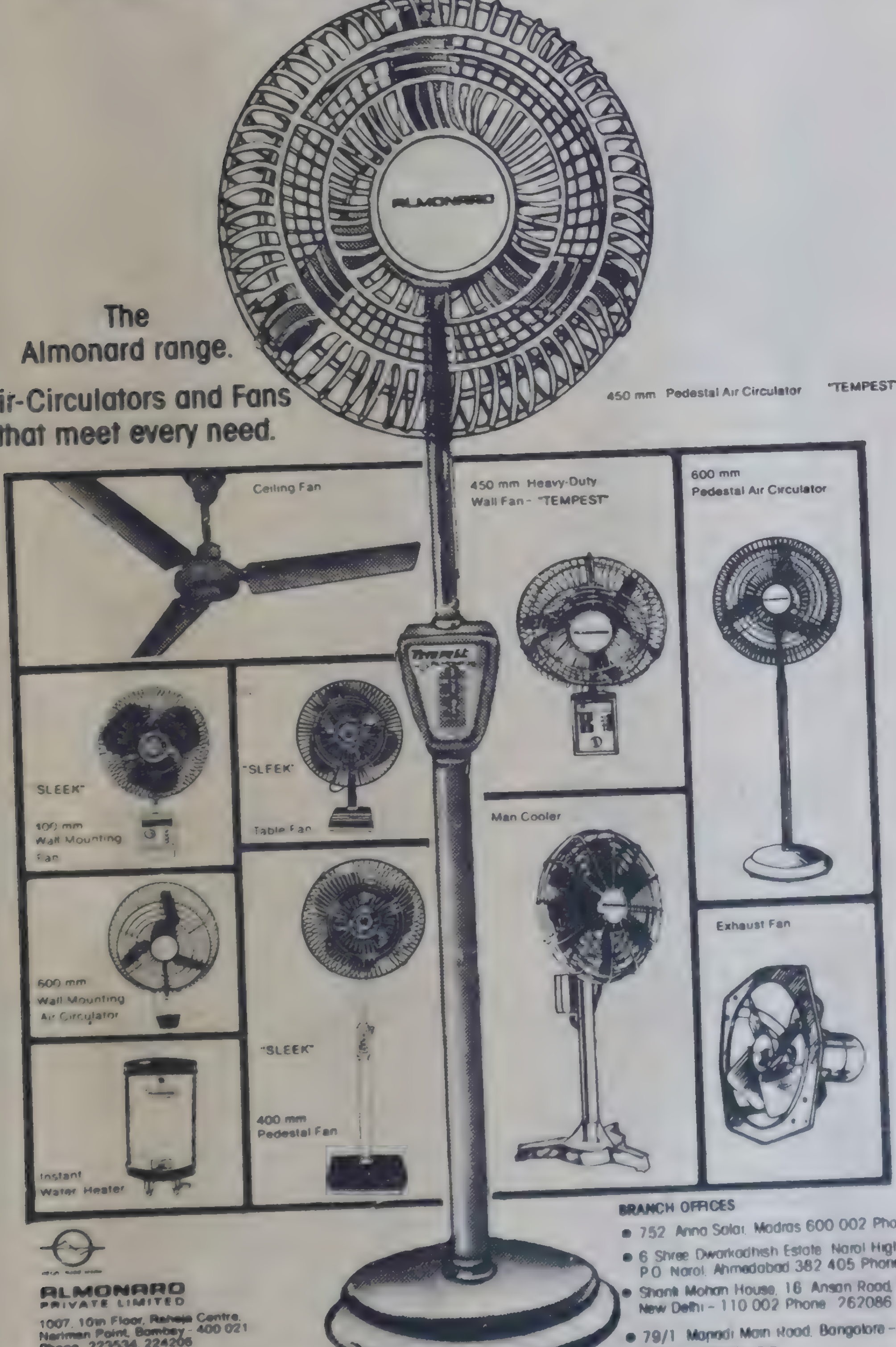
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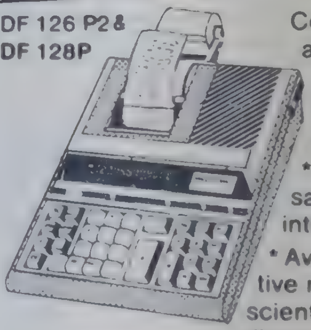

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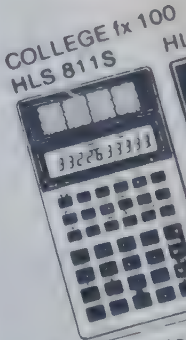

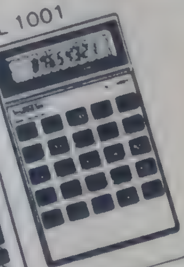

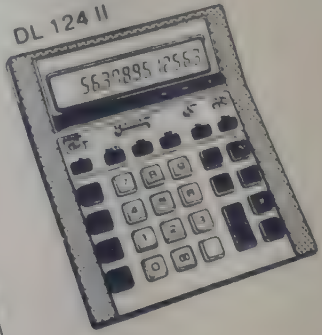

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How time flies. That little baby you rocked in your arms is now off to school. And before you know it, she'll blossom into a lovely young woman. You'll discover with a start that your retirement is no longer far away but a reality that's just around the corner. Does the future scare you? A little wise planning now can make the coming years a more cheerful prospect. Check out the savings schemes at Catholic Syrian Bank. They were designed with you in mind.

Take the "Family Welfare Deposit". It's ideal if you plan to buy a house, a car or to meet any major expenditure.

Do you have a small odd sum you've been planning to invest? Get a Diamond Jubilee Certificate and watch it grow into a fat round figure.

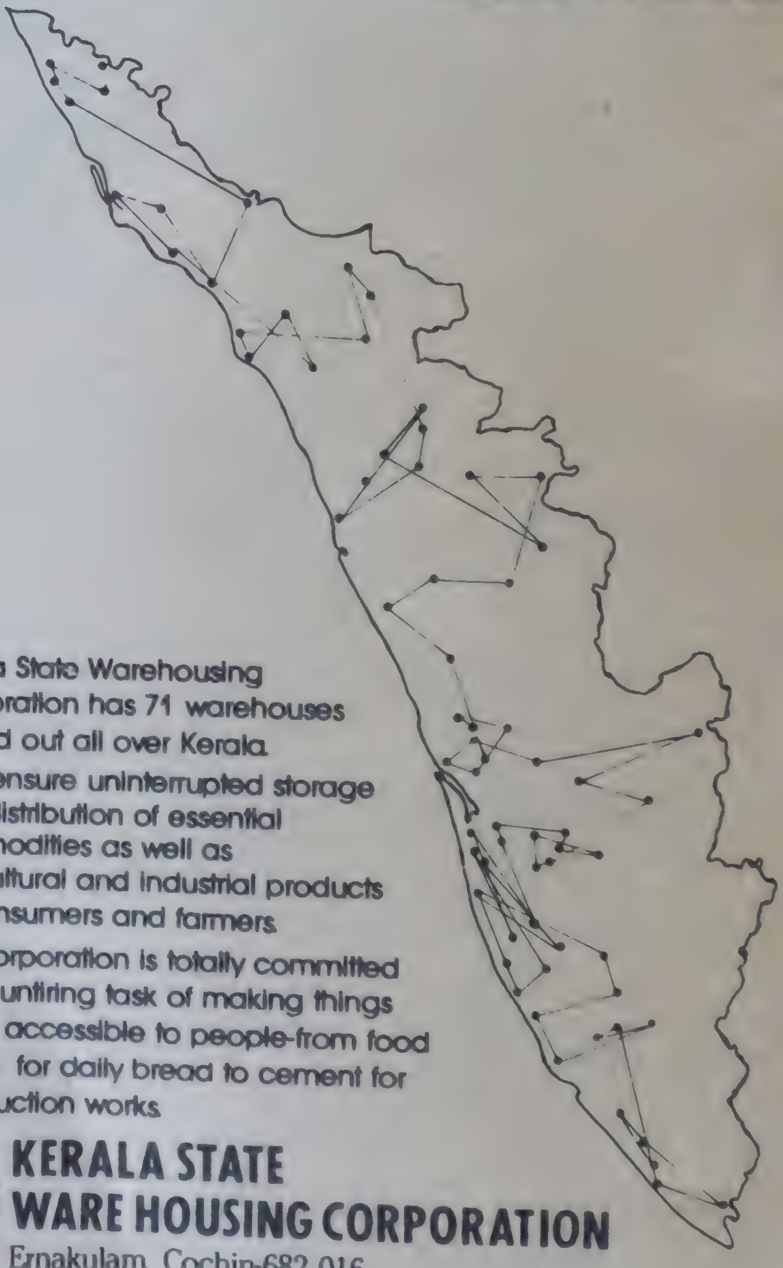
And for a steady comforting income supplement after you retire, there's the "Swaraksha" Scheme.

Some people live for today but chances are they'll live to regret it. Choose the wise course. Drop in at Catholic Syrian Bank soon. One day you'll be glad you did.

Catholic Syrian Bank
The Catholic Syrian Bank Limited
H.O. St. Mary's College Road, P.B.No: 502, Trichur 680 020

OBM 9826

THE WAREHOUSING NETWORK



Kerala State Warehousing Corporation has 71 warehouses spread out all over Kerala.

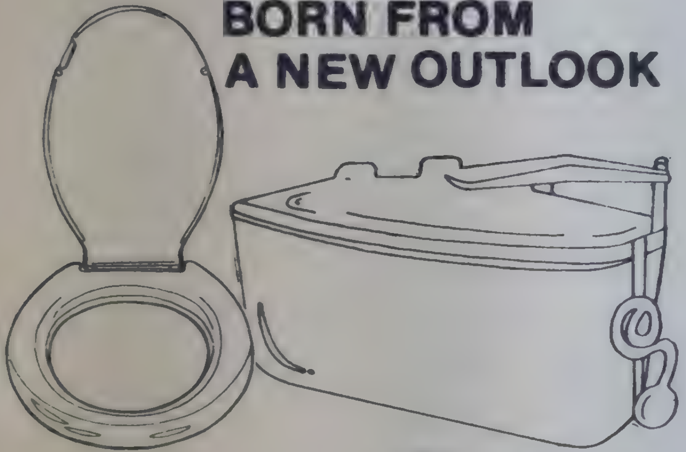
They ensure uninterrupted storage and distribution of essential commodities as well as agricultural and industrial products to consumers and farmers.

The corporation is totally committed to an untiring task of making things easily accessible to people-from food grains for daily bread to cement for construction works.

KERALA STATE
WARE HOUSING CORPORATION
Ernakulam, Cochin-682 016.

Guide

A FRESH NEW LOOK
AT TOILET,
BORN FROM
A NEW OUTLOOK



Monalisa
Toilet Seat Covers

Italian design, for the first time in India among toilet seat covers, which combines functionality with elegant looks.

Smooth lustruous finish leaves no sharp edges or humps.

Five year guarantee – No other toilet suite comes with a five year guarantee.

Unbreakable plastic hinges accentuate its lasting quality

Available in 15 computer matched ceramic colours and black.

Eminently adaptable to any brand of sanitary ware available in the market

Made of virgin polypropelene

Available in both solid and hollow models

Feather Touch
Flushing Cisterns

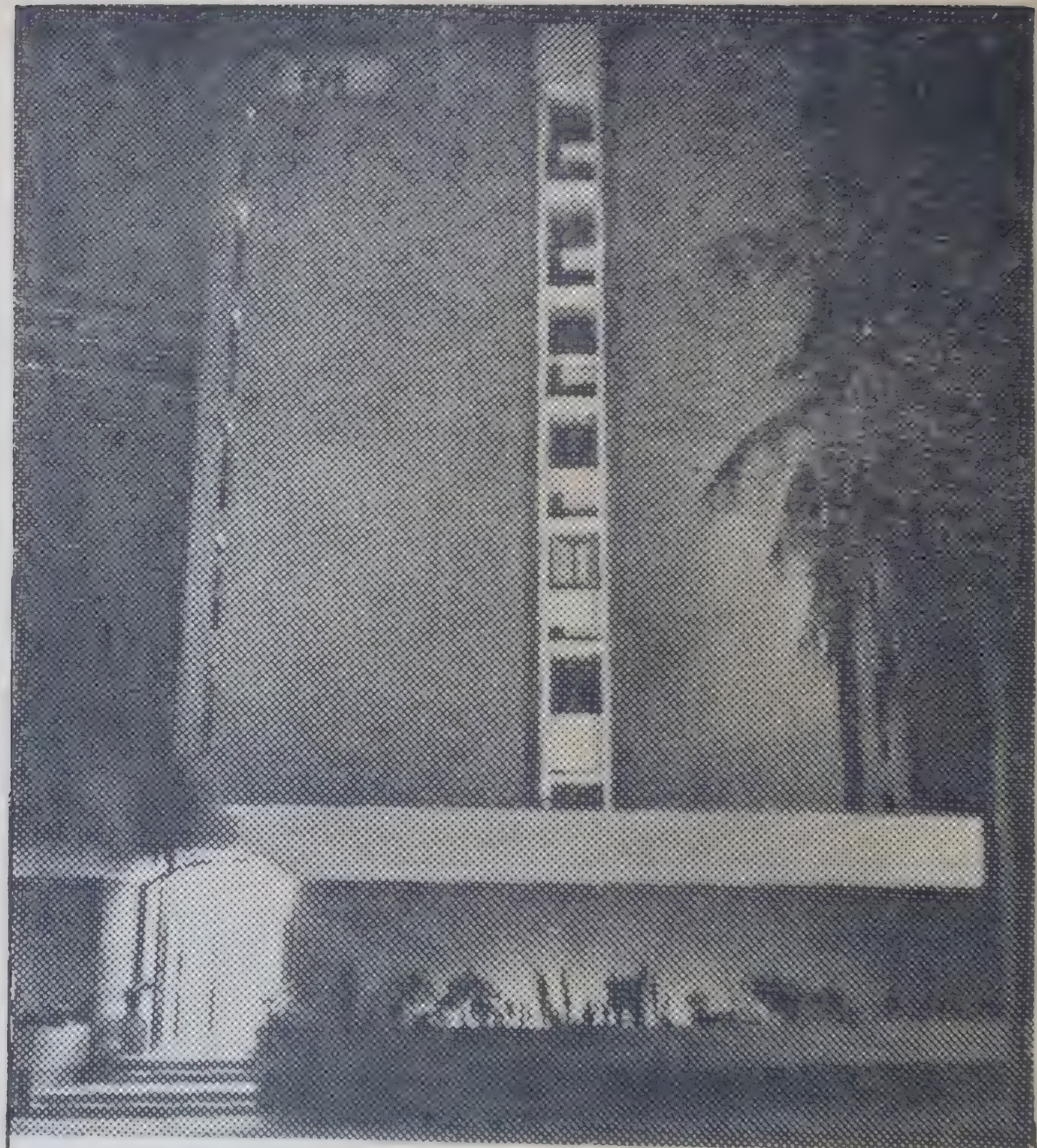
As its name indicates this light weight, yet strong flushing cistern is easy to operate and elegant to behold. Made of virgin High Impact, High density Polyethylene (HDPE) that will never rust or chip ensure a life time of comfort

There are only as little as possible movable parts in its mechanism, which makes it cent percent fail proof and easy to care about

There is a free replacement guarantee against all manufacturing defects, besides the one year guarantee

DEEPA
DEEPA PLASTICS
& POLYMERS
PARAPPUKKARA EAST, TRICHUR-680 310. PHONE 0487-88698

Guide



New light on round-the-clock home protection

It's great to be living on your own in some sprawling bungalow. But unless you can afford an army of Gurkhas, you had better opt for the reassuring security of Saraswathi Nilavam, Trivandrum.

The second phase of this elegant Kowdiar project will be managed by an influential owners' association with the resources to retain ever-vigilant security staff.

Book a superbly-appointed flat here now and give yourself worry-free living.

Saraswathi Nilayam
Phase II

Si SOUTHERN
INVESTMENTS

T.C. No. 9/281/2, Jawahar Nagar, Kaudiar P.O.,
TRIVANDRUM 695 041 Phone: 63684

When the real thing happens, can you pay thousands for medical expenses?

MEDICLAIM

You pay as little as Rs 250. You can claim Hospitalisation and Domicilliary Hospitalisation Medical expenses upto Rs 17,600 a year.

HOSPITALISATION AND DOMICILLIARY HOSPITALISATION BENEFIT POLICY

- covers treatment in a registered Hospital/ Nursing Home/Clinic, or even at home under qualified medical supervision. You are reimbursed upto 80% of the costs.
- is ideal for professionals, businessmen and executives.
- offers you 2 Schemes and 5 categories of benefits — the range is from Rs 17,600/- to Rs 94,000/-. Hospitalisation benefit covers room, board, nursing fees as also ICU
- Has special 10% discount if the family is insured — each being insured individually
- Offers tax benefits. Premiums paid by cheque are eligible for deduction of income-tax under Section 80-D.
- allows you to renew the policy. Renewal must be in the same category.
- gives you a Cumulative Bonus for claim-free years.

PERSONAL ACCIDENT INSURANCE

You can also get personal accident insurance cover upto a maximum of Rs. 1,50,000 on payment of additional premium.

Don't wait for fate! Contact your agent or any of these offices, today:

National Insurance Company Limited
3, Middleton Street, Calcutta 700 071

The New India Assurance Company Limited
New India Assurance Building, 87
Mahatma Gandhi Road, Fort, Bombay-400 023

The Oriental Insurance Company Limited
Oriental House, P B No 7037, A-25/27
Asaf Ali Road, New Delhi 110002

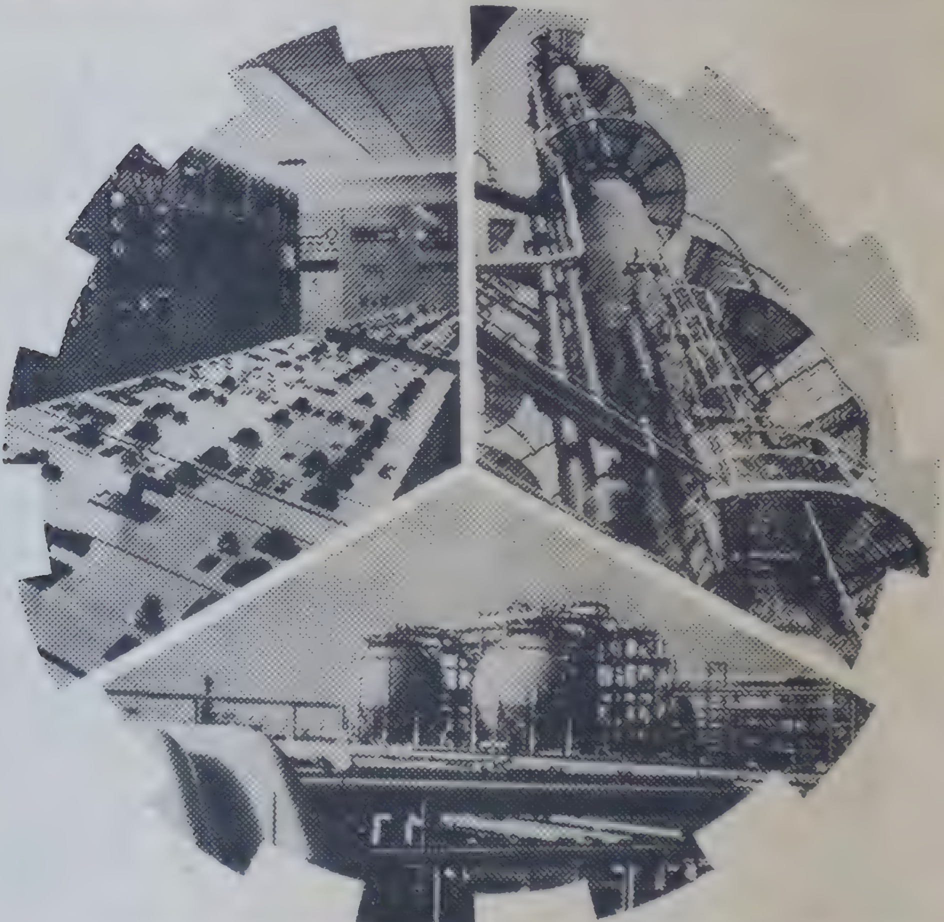
United India Insurance Company Limited
SIAC Building, 24, Whites Road, Madras 600 014

Subsidiaries of

GENERAL INSURANCE CORPORATION OF INDIA
Industrial Assurance Building, Churchgate
Bombay - 400 020

GIC 3/86

Larsen & Toubro Limited — India's multi-dimensional engineering organisation —



offers comprehensive services in project execution

L&T — one of India's leading engineering organisations, provides a comprehensive package of plant and equipment and construction services. L&T has been associated with leading engineering contractors like Davy Powergas, Foster Wheeler, Haldor Topsøe, M. W. Kellogg, Snamprogetti, Toyo Engineering, Takenaka Komuten, Kumagai Gumi ... in the execution of various projects.

L&T has well equipped engineering and manufacturing facilities covering a wide spectrum of sophisticated plant and equipment particularly for hydrocarbon based industries such as fertiliser, chemical and petrochemical as well as cement, power, steel, food processing...

L&T has supplied specialized equipment and extended civil, mechanical and electrical engineering services for several large fertiliser, petroleum refining, petrochemical projects ... in India and abroad.

LARSEN & TOUBRO LIMITED
P. O. Box 278, Bombay 400 038, INDIA

New tyres for your Maruti?

Get the tyres that Maruti chose first

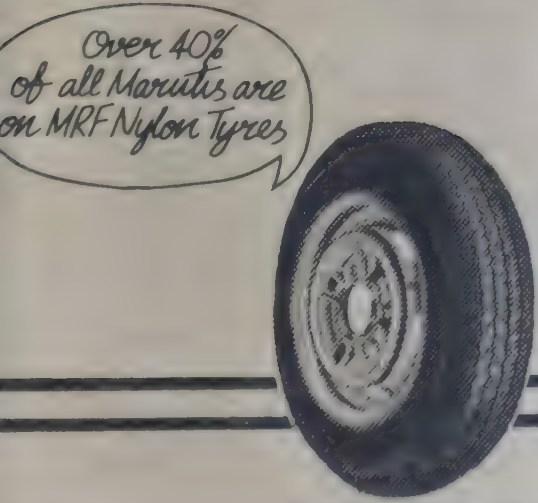
MRF NYLON TYRES

Among all car tyres in India, MRF NYLON TYRES were the first tyres chosen by Maruti – for which nothing but the best will do.

Today, more Marutis run on MRF TYRES than on any other tyre.

So when you need new tyres for your Maruti, why take any risks: Stay with MRF NYLON TYRES.

The makers of the Maruti know what's best for your car.


Over 40% of all Marutis are on MRF Nylon Tyres

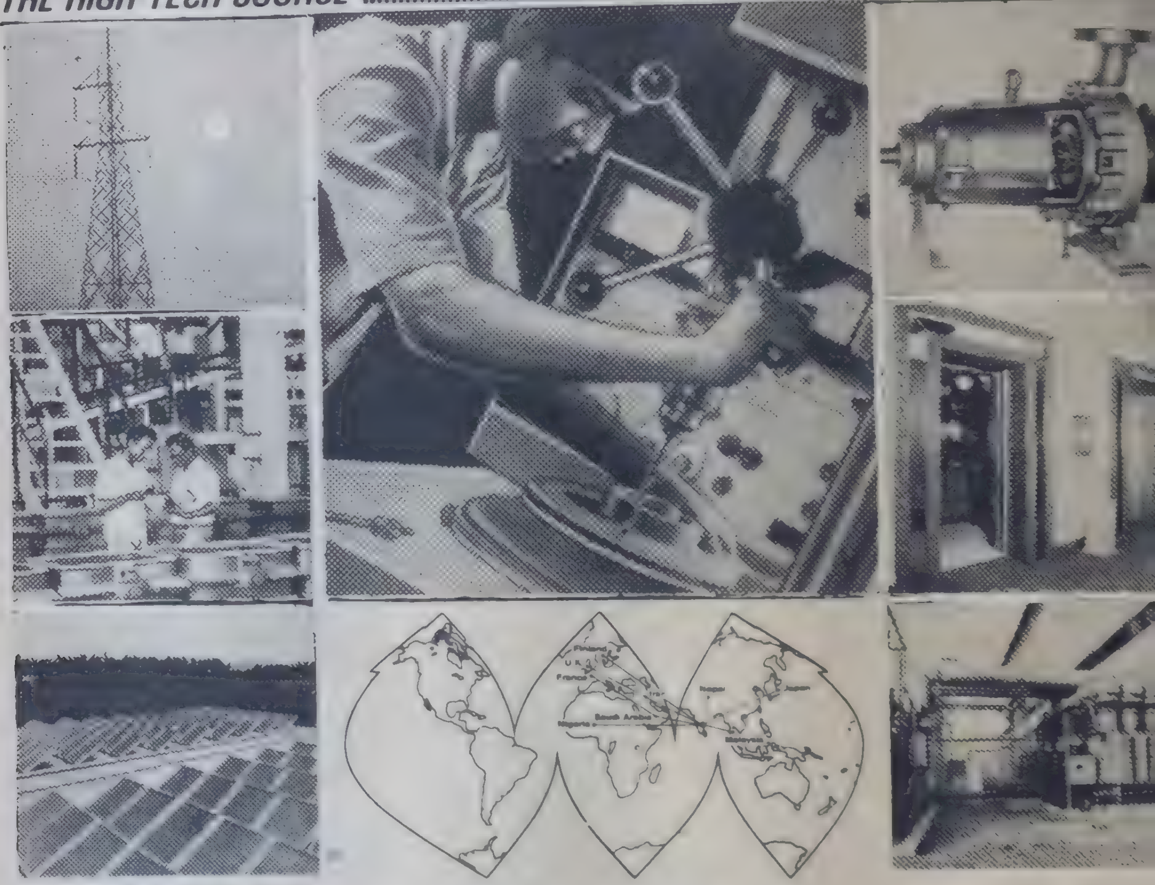
MRF TYRES

Tyres with Muscle

F TYRES are made in technical collaboration with the BF Goodrich Company of USA

LINTAS M MRF NCT 47 1814

BEST & CROMPTON
THE HIGH-TECH SOURCE



Best & Crompton :
at the very core of the core sector

Power, energy, transport, construction, steel, chemicals, fertilisers, cement, refineries and other heavy engineering industries – the list of the core sectors of Indian Industry could well be a list of Best & Crompton's areas of involvement.

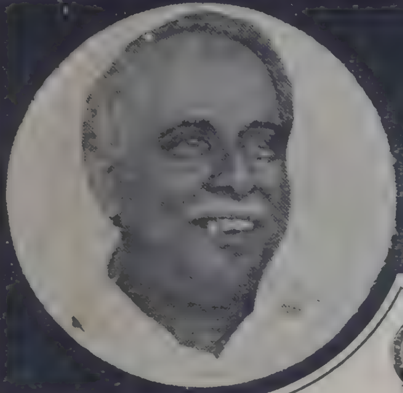
The Rs. 125-crore multi-divisional corporation which manufactures a range of engineering products (castings, heavy-duty pumps, auto-electricals, valve actuators, busducts, control panels, train lighting alternators – among others) also provides turnkey service in every branch of engineering and project management in India and abroad.

Overseas connections extend to UK, Japan, France, Finland, Denmark, West Germany, Malaysia, etc., and are growing everyday.

Some of the joint ventures include Beacon Rotork (valve actuators), Beacon Weir (Pumps), Beacon Kone (lifts and escalators), Beacon Tileman (chimneys and tall concrete structures) and Beacon Neyrpic (micro, mini and small hydel turbines).

Best & Crompton

Best & Crompton Engineering Ltd.
29 Rajaji Salai, Madras 600001.



Anna Government's efforts towards an egalitarian society.

> "Peace, Unity and Progress must be our life breath as we work together with the responsibility of raising India to Glory."

HON'BLE CHIEF MINISTER Dr. M.G.R

- A programme that created massive employment to rural women-the utmost by any one programme in India-a lakh women benefitted. The Chief Minister's Nutritious Meal Programme benefits 80 lakh children at 65 344 centres Programme extended to Ex-servicemen and old age pensioners also.
- Trained manpower on the rise! Self Financing Private Medical Colleges, Engineering Colleges and Polytechnics encouraged to cater to the nation's need for skilled personnel
- Recommendations of the Fourth Pay Commission accepted. Ceiling of gratuity raised to Rs 50,000 and increase in monthly emoluments by as much as Rs 360 - benefitting 9 42 lakh employees at a cost of Rs 145 crores
- Free! A Kilo of rice to buyers of twenty Kilos of rice at Fair price shops.
- Three hundred percent increase in the number of small scale industries since 1977 600 large and Medium scale industries in the last seven years
- 93 483 Adi Dravidar Receive house site pattas along with 1,18,998 poor people
- Sustenance to the Pensioners! Minimum Pension raised to Rs 235 - from Rs 50 before 1 4 78
- Agricultural Loans of Rs 148 5 crores granted during 1984-1985
- Almost a primary school a Day! 355 New primary schools opened during 1984 85
- Two thirds by the Government. 8994 Buses operated by the 12 Transport Corporations out of the 14,140 buses in the state
- A Friend in need: 13,206 Craftsmen living below poverty line given training and assistance at a cost of Rs 137 lakhs
- A lasting political solution to solve the Srilankan Tamils problem on the way by the Government's efforts
- Srilankan repatriates given loans and grants worth Rs 45 crores. 5,844 families repatriated through Tamilnadu Tea Corporation and co-operative spinning mills
- Drinking water supply made feasible in 20 000 Adi Dravidar Colonies
- A three year special programme to provide basic neccessities such as Housing, Drinking Water, Roads and Schools to Adi Dravidars and Scheduled Tribes
- Scholarships to workers children amounting to Rs. 3 47 Lakhs
- 2,05,108 House sites alloted to poor including slum dwellers by Housing Board
- Khadi and Village industries commission provides employment to 6 13 lakh people
- For every Thousand card holders, a convenient fair price shop. 2,714 new shops opened
- 1,092 Marriages assisted with aid of as much as Rs 1000 each from temple's fund, including 750 Adi Dravidar marriages Total cost Rs 8 40 lakhs
- Anna Zoological park, India's largest comes up at Vandalur

Tamil Nadu leads in implementing the New 20- point programme. Its performance is hundred percent.

-Central Planning Commission
Report 24.4.1985.

The taste at its top

In the heart of the
coastal city of MANGALORE
a splendid place for
tourists - An oasis for those
who are for good taste &
comfort - the comfort you
never forget & the taste that
linger long.

- AC & Non AC rooms.
  with superb furnishings.
- Telephones & Channel Music.
- **COLOUR** Television Facilities.
- Conference facilities
- RR Plantain leaf
  Veg. & Non - Veg. Restaurant

**Luxury
at its quietest.**

Hotel HILLTOP

Court Hill Road, MANGALORE - 575 001
Telex : 0842 - 324 COME IN
Phone : 31621 (PBX 10 Lines)

SHREYUS HOTELS Pvt. Ltd.

KALKURA ADVT

मेडिमिक्स
MEDIMIX
AYURVEDIC TOILET SOAP

15 Powerful Herbs

Coconut Oil Foam

Kewda Flower Perfume

MEDIMIX AYURVEDIC TOILET SOAP

NOW IN ATTRACTIVE LAMINATED CARTON BOX

P. P. DISTRIBUTORS
M-4, ANNA NAGAR, MADRAS-600 102

ZEST/MS/105

Tourism Fosters Friendship
india
भारत

Meet the people striving to make India self-sufficient in petroleum.

They're everywhere. High in the Himalayas, off India's coastline, in the deserts of Rajasthan and the dense forests of the east, in the bunkhouse of an isolated rig on a remote plain, in the sophisticated laboratories of modern research institutes. 37,000 and more people in every conceivable environment, working with single-minded purpose towards making India self-sufficient in petroleum.

What motivates these people?

In the growth of ONGC, they see prospects of their own growth and development. Their quality of life gives them happiness and satisfaction. They work in a congenial environment and posses a sense of pride and belonging. A participative culture prevails, promoting a feeling of mutual trust.

What have they achieved?

They've brought into sight the goal of self-sufficiency in petroleum; their output is rising faster than the rate of consumption in the critical energy sector. They've set new records in drilling and production. They've reduced the technology gap. They're second to none in capability and expertise. They've won faith in themselves and in ONGC.

How are they equipped?

Armed with the latest technology, they're making giant leaps towards self reliance in equipment and services. They've developed new supply sources for tools and tackles and can provide R&D back-up for massive operations in the field. They've introduced computer systems for speed and variety of operations and the latest communication systems have brought farflung work centres closer. The live data thus obtained helps the taking of instantaneous decisions at various levels.

What have they earned?

They've won a reputation for efficiency, productivity and profitability, and goowill for their contribution to nation-building. And they have the trust of the nation in their capability to achieve self sufficiency in petroleum.

ONGC

Oil & Natural
Gas Commission
Tel Bhavan, Dehra Dun-248 001. (U.P.)

Self-sufficiency is independence.

LAND Links

A reliable name in Real Estate business

We arrange purchase & sale of
house sites.
commercial sites,
apartments,
ready built houses,
shops,
commercial complex,
godowns,
hotels,
estates etc.

WE LINK THE BUYER AND SELLER

No matter whether it is 5 lakhs or Rs.500

Phone : 22302

LAND Links

A VENTURE OF DESCO ENTERPRISES

TRICENTENARY BUILDING, MILAGRES CROSS ROAD,
HAMPANKATTA, MANGALORE - 575 001.

TRUST WORTHYNESS IS OUR KEY WORD

KALKURA ADVT

VROOOOM!
Rs. 200 crores

From 0 to Rs. 200 crore sales in just 9 years. That's the kind of success story only a few can tell.

9 years ago the first tyre rolled out of our factory. Backed by the best technology the world had to offer.

You added customer confidence.

The result: 0 to Rs. 200 crore sales in just 9 years. A success story that we'd like to share with you.

Upward Growth in a Downward Market

The figures are important. But even more important is how we got there. Especially since the last 3 years saw a serious slump in the road transport industry, with a drastic fall in demand. But while the truck tyre sales of all other tyre companies dropped by 4.2%, JK went up by 115.1%.

A phenomenal feat in depressing times.

The outcome? JK zoomed to No. 2 position in the truck tyre market — way ahead of those who had established their brand names for over 25 years. Thanks to your confidence in our quality and our commitment to your satisfaction.

The Radial Dimension

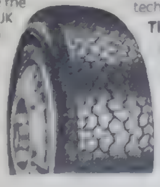
From the very beginning, JK has been committed to providing you more miles for your money. And more performance per mile. A promise that's fulfilled by the JK Radial. A tyre of incredible performance, pioneered by us, and in which we still continue to be leaders. With 300,000 JK Radials on the road bearing testimony to that fact.

Today you have the widest choice of JK Radials, steel belted or fibreglass belted for all makes of cars. With R&D constantly upgrading technology to give you the best that money can buy.

The Road Ahead

Our goal is not only to be No. 1 on the [illegible] in performance and customer [illegible] think of tyres, only the JK name [illegible]

[illegible] confidence of JK.



JK TYRE

More miles for your money.

Small. Sleek.
Sophisticated.

EPABX-SDBX 50/100 from ITI.

EPABX-SDBX 50/100 is yet another product of ITI's advanced R&D. It is a fully integrated system using Microprocessor control to provide PBX service. Adding or changing features is easily achieved because of Stored Programme Control.

The system is highly flexible and requires practically no maintenance. It has attractive features like extension to junction calls, executive right-of-way for priority extensions, three-party conference, class of service restriction for junction access, STD calls and facility access for individual extensions, to mention just a few.

This equipment signifies yet another triumph for ITI's dedicated scientists and engineers, helping ITI spearhead India's communication revolution.

From its six units, ITI manufactures almost the total range of telecommunication equipment - from telephones and teleprinter exchanges to satellite ground communication equipment and sophisticated electronic exchanges.

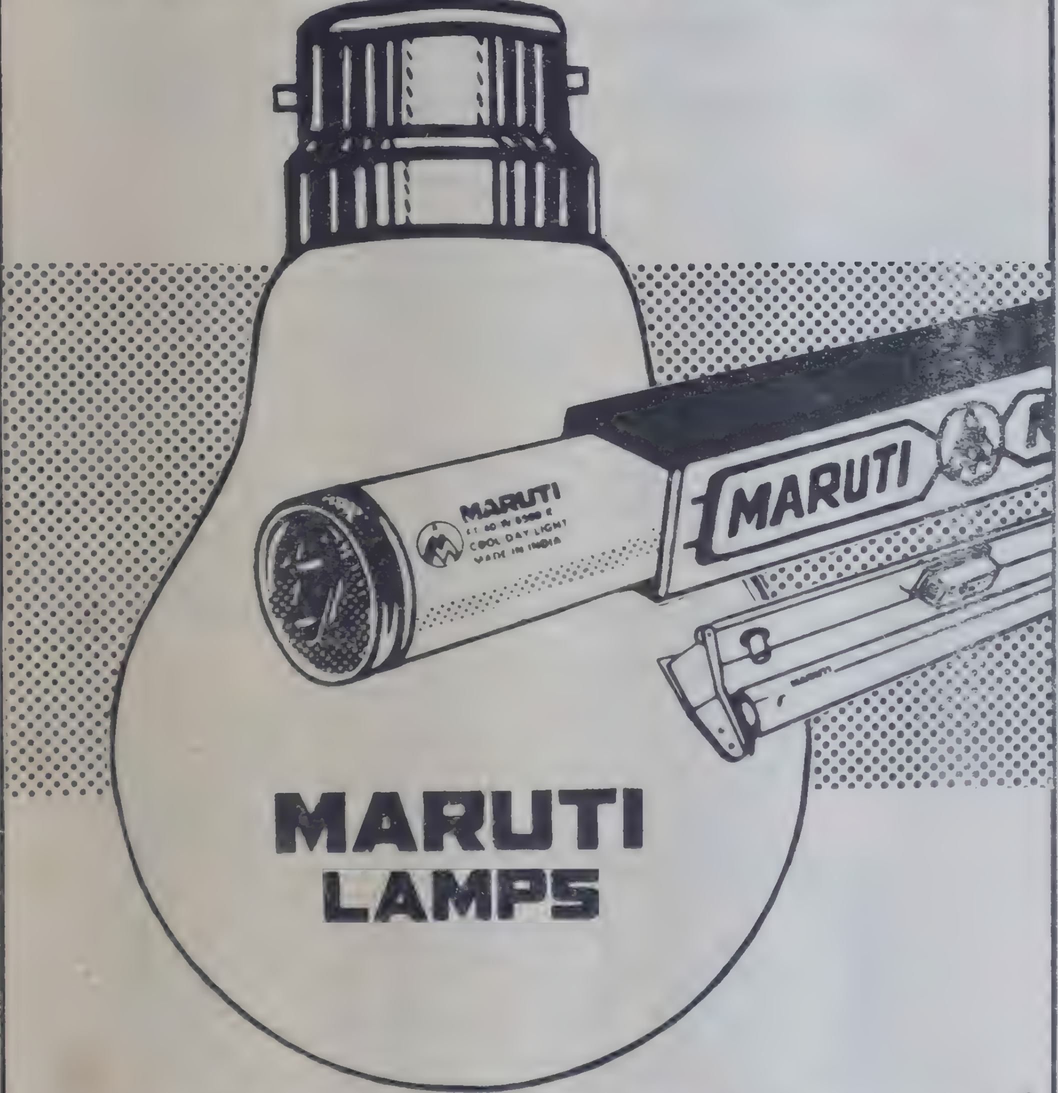
ITI Indian Telephone
Industries Limited
(A Government of India Enterprise)
Corporate Office: 16, Museum Road Bangalore 560 001
Grams: EYETEEEYE Telex: 0845-8222

Units at: Bangalore, Naini, Srinagar, Rae Bareli, Palghat, Mankapur.

Not Just Telephones - Total Telecommunications.

R K SWAMY/ITI/2199R

CHOICE OF THE ELITE


MARUTI
COOL DAY LIGHT
MADE IN INDIA
MARUTI

MARUTI
LAMPS

BULBS, TUBES &
LUMINAIRES

LAKSHMI
Lamps Private Ltd

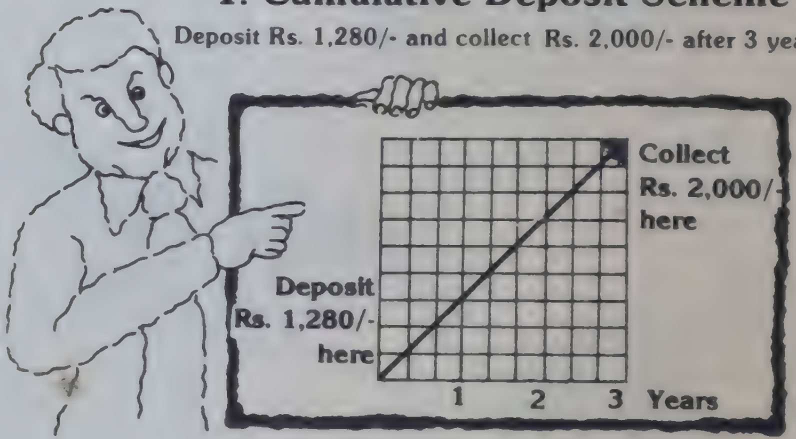
No.7, GIRI ROAD, T. NAGAR,
MADRAS - 600 017. Phone: 446201

ARIES 11,451 86

A simple guide to a no risk, high interest, high yield investment from Sancheti Leasing Ltd

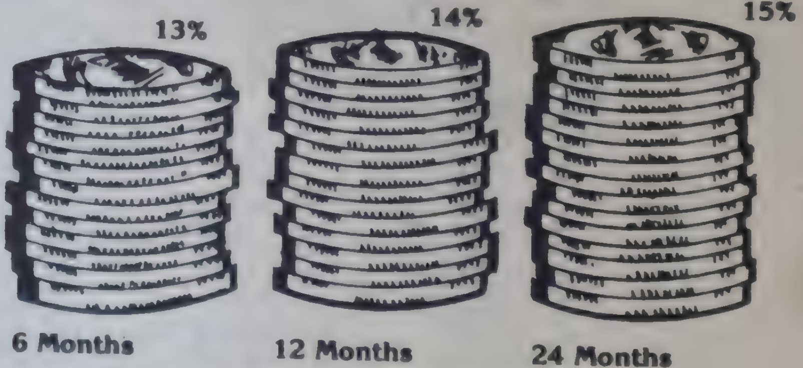
1. Cumulative Deposit Scheme

Deposit Rs. 1,280/- and collect Rs. 2,000/- after 3 years.


Collect
Rs. 2,000/-
here
Deposit
Rs. 1,280/-
here
1
2
3
Years

2. Fixed Deposit Scheme

Fixed Deposits accepted for 6 months (13%) 1 year (14%) and 2 years and above (15%)
Interest paid monthly/quarterly/half yearly or yearly
1% Interest extra for single Deposits of Rs. 25,000/- for 1 year.


13%
14%
15%
6 Months
12 Months
24 Months

Dividend paid by the Company 1984 – 9% 1985 – 12%

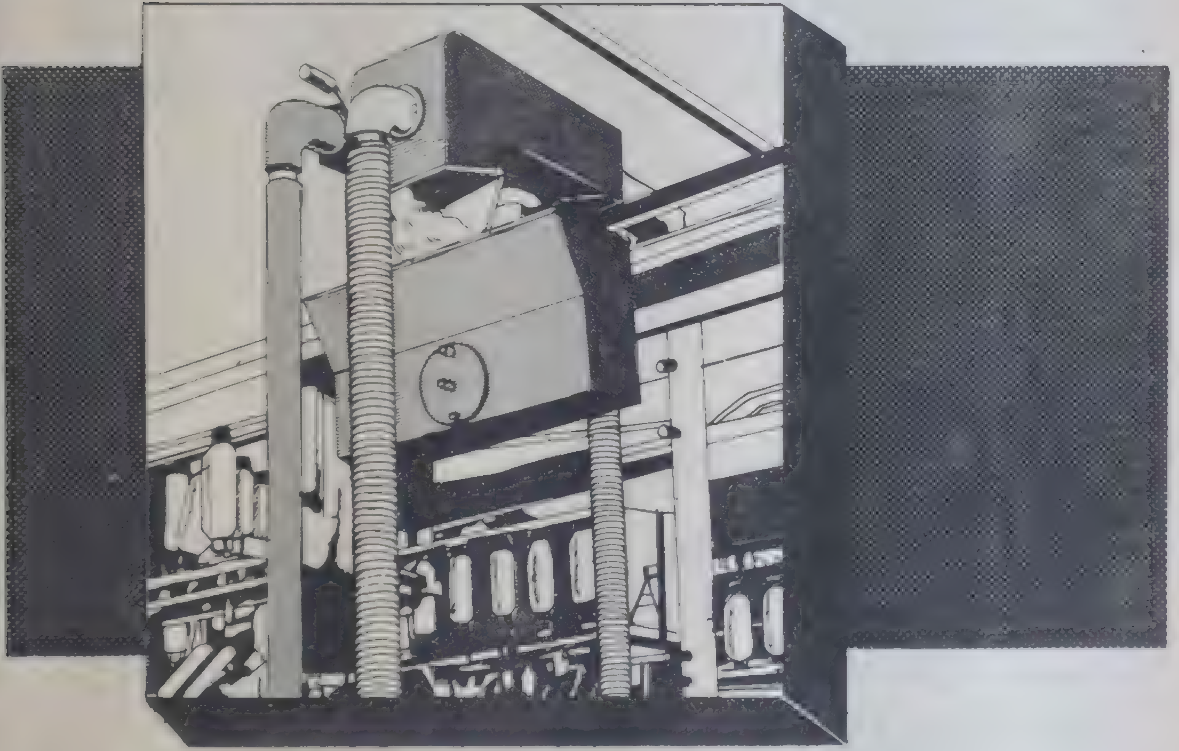
Echo

For Details contact :

SANCHETI LEASING LIMITED
Regd. Office : 581, Mount Road, Madras – 600 006.
Ph : 451990 Telex : 41-8808 SALL IN
Grams : HAPPYLEASE.

This abridged advertisement appears further to the Statutory advertisement published by the Company on 1st July 1986 in "Indian Express"

OVERHEAD TRAVELLING CLEANERS FOR TEXTILES FROM FESTO ELGI



Overhead travelling cleaner with automatic discharge:

Keeps the Spinning and Doubling frames free from dust and fluff, by blowing and suction. Improves efficiency, by reduction of end breakages

Overhead travelling cleaner-blower:

This unit is designed to serve Cone Winding machines and twisting frames, and caters to one single machine or number of machines having the same structure and installed in line or parallel to each other

Clearer Roller, Cleaner:

An excellent device to clean the clearer rollers automatically. Saves 80% of the cleaning time and labour. And is easily transportable

FESTO ELGI PRIVATE LIMITED

Post Box No. 1010
ELGI Industrial Complex [illegible]
Trichy Road, Singanallur
COIMBATORE – 641 005
Telephone No: 872733 & 872843
Telegram: 'FESTOELGI' Telex: 0855-222

Efficient/FE/134/86

NALLI Horns
Our offer makes
sound business sense.

SUPER
Nalli
SOUND
PATENT NO.
152586

Here's why they sell
Nalli Horns with pride:

- India's first high volume electric horn to work without battery.
- Available in 6 volt and 12 volt for A.C. and D.C. vehicles.
- 6 months guarantee. Free service for life.

Sole Licencee:

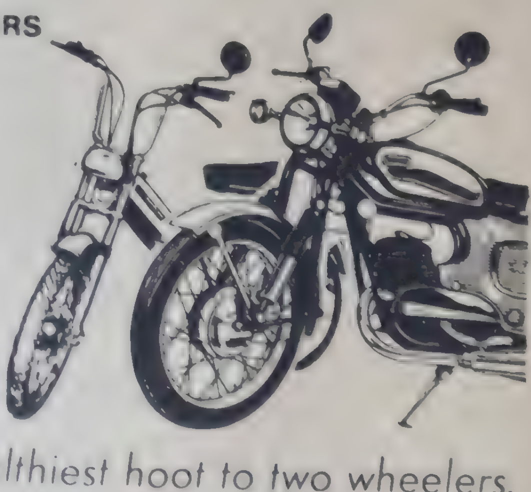
SOUTHERN HORN MANUFACTURERS
170 NORTH USMAN ROAD
T' NAGAR MADRAS – 600 017.
Phone: 441572

Sole Distributor:

POPULAR SPARES
MADRAS – 600 002.

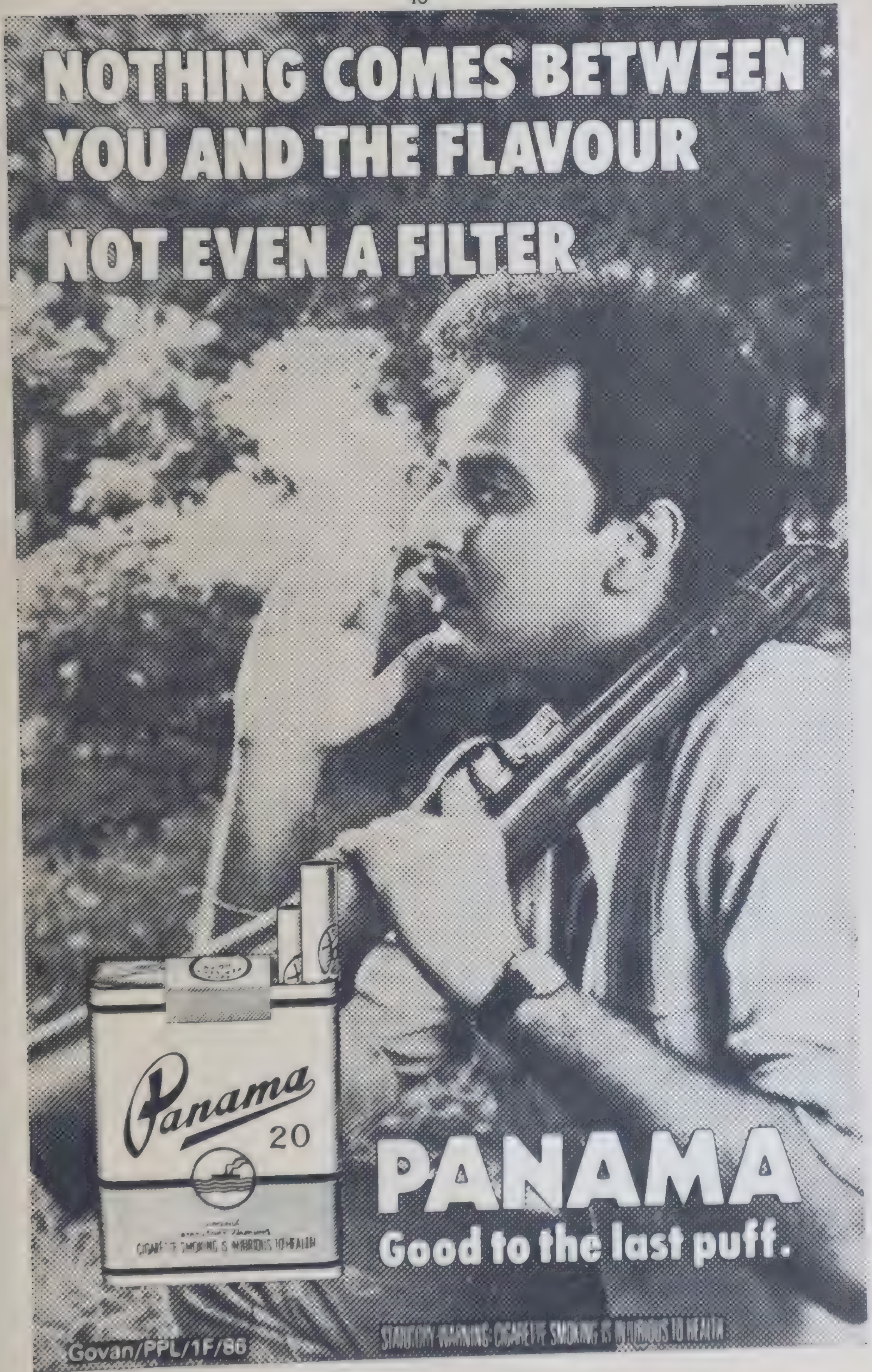
Kerala Distributor:

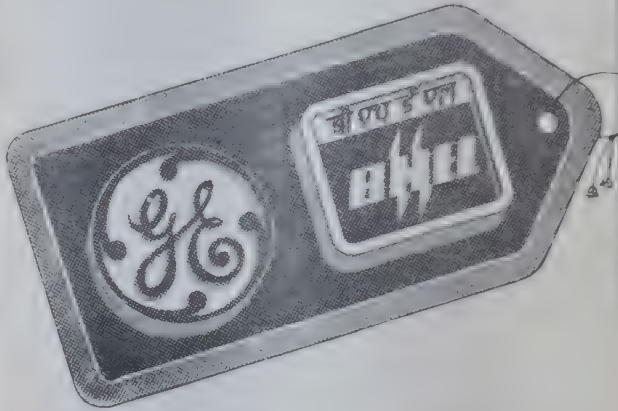
POURNIMA TRADING CORPORATION
COCHIN – 682 331

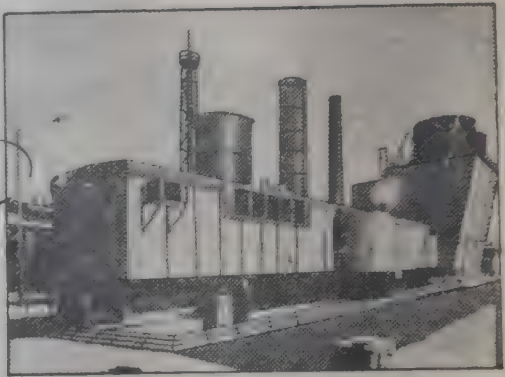


Nalli
Horns – Give the healthiest hoot to two wheelers.
Dealer enquiries solicited.

ARIES


NOTHING COMES BETWEEN YOU AND THE FLAVOUR
NOT EVEN A FILTER
Panama
20
CIGARETTE SMOKING IS INJURIOUS TO HEALTH
PANAMA
Good to the last puff.
STATUTORY WARNING: CIGARETTE SMOKING IS INJURIOUS TO HEALTH
Govan/PPL/1F/86





BHEL signs a technical collaboration agreement with General Electric, USA, to manufacture Gas Turbines at its Hyderabad Plant.

The Product: The agreement covers manufacture of Gas Turbines upto 40 MW rating in standard frame sizes generally referred as Frame 1, Frame 3, Frame 5 and Frame 6. An important feature of the technical agreement is the provision for manufacture of all critical parts of the Gas Turbine like rotor, combustion chamber and transition piece in high temperature zone, etc. The matching generators will be as per latest designs and will be completely manufactured at BHEL,Hyderabad.

Proven Performance: With this agreement, BHEL will have access to, and can draw upon General Electric's expertise and experience of setting up 3600 such units worldwide and running them for over 115 million hours.

Fuel Flexibility: The Gas Turbines are designed to use a variety of fuels ranging from Natural Gas to Light and Heavy Distillates, Naphtha, Crude and Residual Oils.

Wide Applications: These Gas Turbines find ready use in diverse areas: as drives for compressors in booster station in Gas Transportation projects; for Captive Power Plants in fertiliser, petrochemical, refinery, oil and other process industries; for Mobile Power Plants in gas bearing zones; for Off-shore platforms and for simple cycle Package Power Plants for base and peak load services, Combined Cycle Plants and co-generation applications.

BHEL — Making the best work for you.

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad-500 032.
Regd. Office: 18–20, Kasturba Gandhi Marg, New Delhi-110001.

THE
MOST
RELIABLE
GAS
TURBINE
IN THE
WORLD
IS NOW
MADE BY BHEL

WATER DEVELOPMENT SOCIETY

MOULA ALI,
HYDERABAD

- Scaling New Heights while reaching unknown depths.
- Developing a strong industry and a strong nation in partnership with the rural poor.
- Manufacturing indigenous, versatile and wide ranging water and mineral drilling rigs.
- In rural India's life and part of it.

TELEPHONES:
853011/ 853012/ 853013

Grams: "ROCKRIG"   Telex: 155 6919 WDS IN

THE KERALA STATE CO-OPERATIVE BANK LTD.

H.O. TRIVANDRUM

A SCHEDULED BANK Closely associated with the Agricultural and Rural Development of the State.

● Accepts deposits under a variety of attractive Schemes.

●● Transacts all kinds of Banking Business.

●●● Locker facilities at our Head Office - Main Branch, Statue Branch, Karamana Branch, Medical College Branch, Kaithamukku Branch, Ernakulam Branch, Calicut Branch and Trichur Branch.

●●●● Gold Loan facilities at Peroorkada Branch, Kaithamukku Branch, Medical College Branch, Vazhuthacaud Branch, Calicut Branch and Trichur Branch.

Branches at Trivandrum: Overbridge Junction, Statue, Karamana, Peroorkada, Medical College, Vazhuthacaud, Poojappura, Kaithamukku.

Outstation Branches: M.G. Road, Ernakulam, High Road, Trichur, M.M. Ali Road, Calicut.

K.M. BALAKRISHNAN
MANAGING DIRECTOR

THACHADY PRABHAKARAN
(Hon'ble Minister for Finance, Kerala)
PRESIDENT.

Malabar Cements Ltd.
(Kerala Government Undertaking)
PALGHAT-678 001
(KERALA)

**The
Only
Factory
Producing
Portland Cement
In Kerala State**

"MALABAR" Cement
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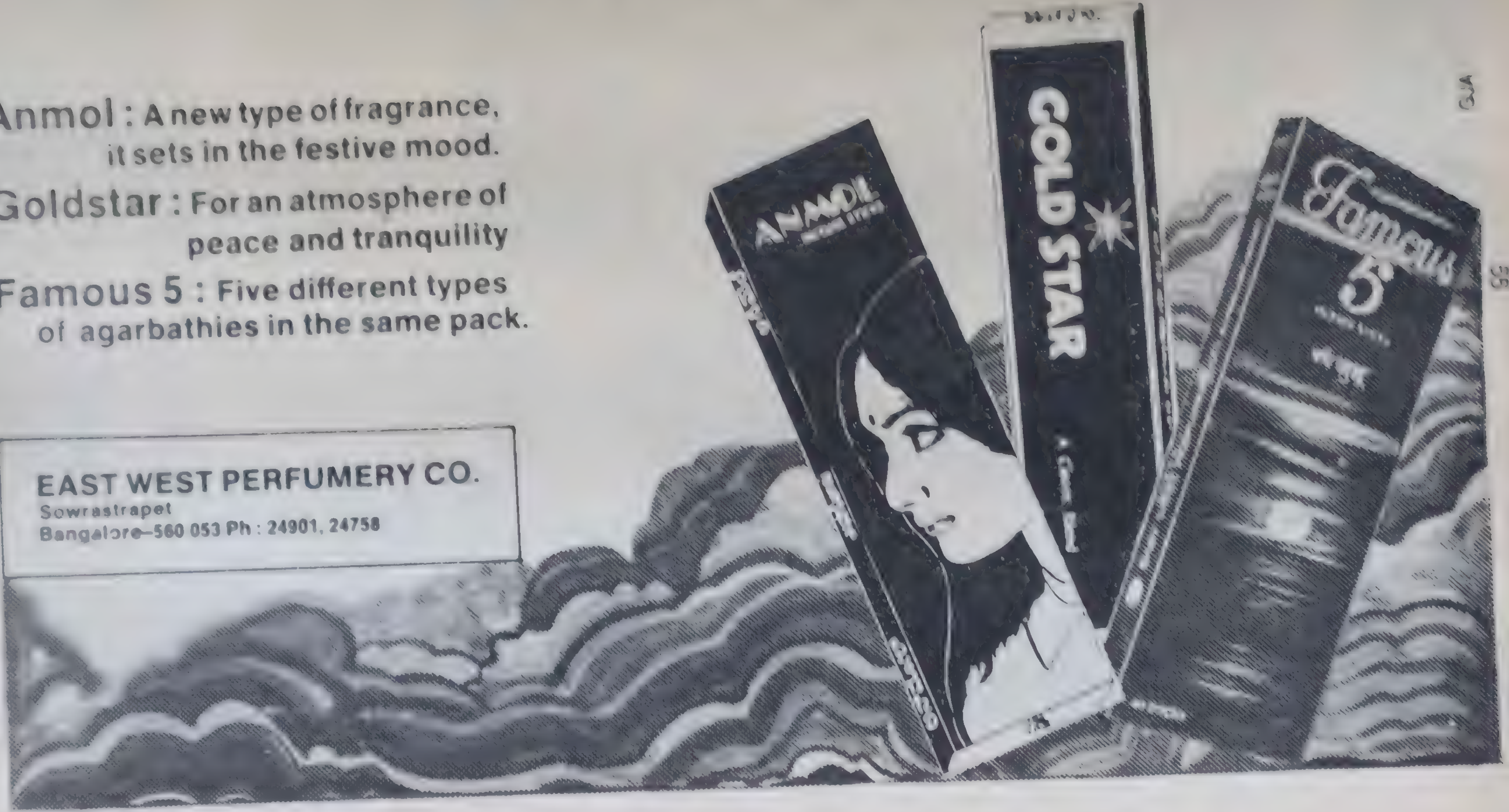

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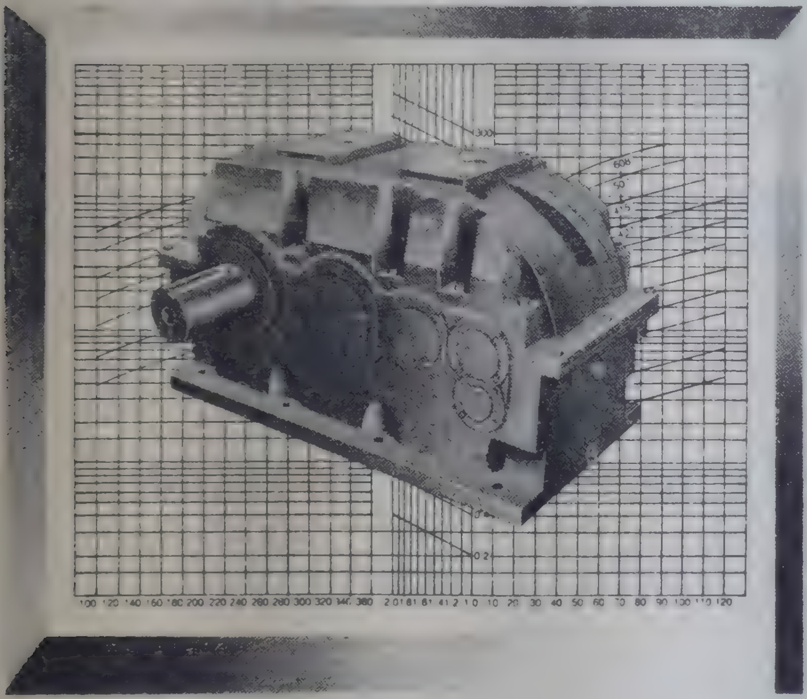

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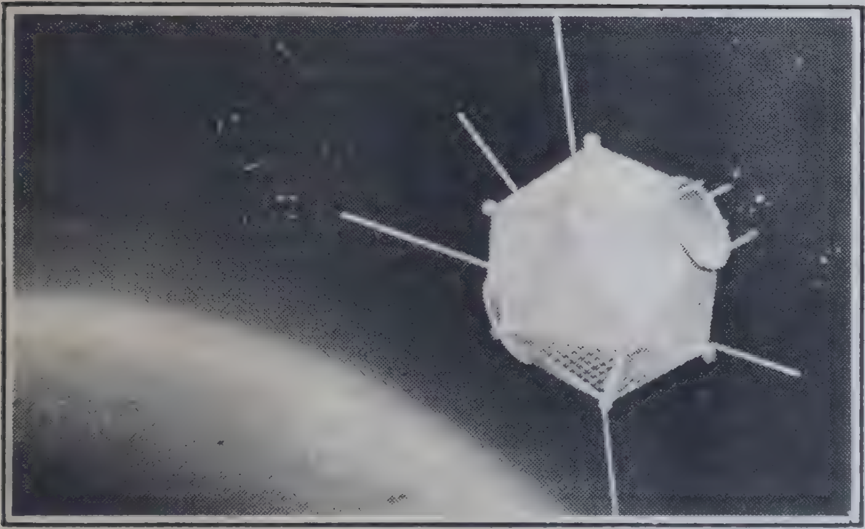

PART ONE

SCIENCE AND TECHNOLOGY

THE UNIVERSE

The Universe is infinite in time and space. We do not know when it began or when it will end. Of course, the human conception of the universe (or space as is now better known) has been changing with the passage of time.

When the universe was first conceived of as an orderly unit, it was called COSMOS, as opposed to chaos, and the studies relating to the Cosmos were known as Cosmogony or Cosmology. Today, we speak of Space and Space Sciences.

A regular enquiry into the universe was first instituted in AD 140 by Claudius Ptolemy, a Graeco-Egyptian astronomer. He propounded the theory that the Earth was the centre of the universe and that the sun and other heavenly bodies revolved around it. There have been several theories since, the more important of which are given below:

Copernican Theory. In 1543, Polish astronomer Copernicus argued that the Sun was the centre of the universe and not the Earth.† Though the Copernican theory changed the centre of the universe it did not change its extent. The Copernican universe was still equated with the Solar System. It took another three and a half centuries before our ideas changed further. By 1805 telescopic studies made by the British astronomer, Herschel, made it clear that the universe was not confined to the solar system. The solar system itself was only a part of a much vaster star system called the galaxy. The universe thus became quite extensive comprising millions of stars scattered about the Milky Way. But our vision of the universe ended there.

As the 20th century opened, it seemed that the Milky Way galaxy with its cluster of over a hundred billion stars together with its attendant satellitis, the Magellanic clouds, actually represented all there was to the universe. In 1925 the American astronomer Edwin P. Hubble (1889-1953) pointed out that there were other galaxies in the universe and that the universe actually consisted of millions of galaxies like the Milky Way. In 1929 Hubble proved that these galaxies are flying away from each other and that the farther they are, the faster they fly. This meant that the universe is expanding like a balloon that is being blown up.

Looking from the Milky Way, we can find our outer galaxies are receding at increasing velocities. A cluster of galaxies in the constellation of Virgo, some 50 million light years away from us, is seen moving away at about 1200 Km. per second, while a group in Hydra, 2700 million light years away, is racing off at as much as 57,600 Km. per second. Our own galaxy, the Milky Way, in comparison, appears to move slowly at a modest speed of 600 km per second.

How big? The tricky question still remains unanswered. If, as Hubble showed, the speed of galaxies increases with distance there must come a point at which galaxies fly at the speed of light. At this point we cannot observe anything. As Isaac Asimov puts it "From Hubble's demonstration of increasing speed of recession with distance.... it would now appear that at a distance of 12.5 billion light years, galaxies would be receding, relative to us, with the speed of light. Nothing beyond that could be observed. The observable universe has a diameter of 25 billion light years and the number of galaxies it contains is uncertain."*

The movement of a star or a galaxy affects its light as seen by an observer. If the star is moving towards the observer, its light will be shifted towards the blue end of the spectrum. If the star or galaxy is moving away from the observer its light will be shifted to the red

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† Also see *Earth*

* Eyes on the Universe.

Big Bang Theory Challenged

A widely held view, forming a basis for the accepted theories of universe evolution—that the present abundance of helium is the universe in predominantly the product of the primordian processes of nucleosynthesis soon after the Big Bang, billions of years ago—may now face a challenge from the observations made by the Infrared Astronomical Satellite (IRAS) flown by NASA in 1983.

The satellite has picked up images of a class of 'red objects' which are dust and gas-rich galaxies with very high luminosities. Their bolometric luminosities (total radiation in the entire electromagnetic spectrum which makes sense only in observations avoiding the atmospheric absorption, such as in satellites) have been found to be 10 to the power of 12 times the solar luminosity. IRAS has identified 10 such objects which radiate intensely in the infrared wavelength regions of the specturm.

"Genuine primordial galaxies" is what Prof. Geoffrey Burbidge of the University of California, San Diego, U.S., called them, describing one such object—NGC 6240— at the International Astronomical Union (IAU) meeting in New Delhi is Nov. 1985.

These are primordial only in-asmuch as the galaxies, as seen today, seem to be in the stages of thermonuclear processes of nucleosynthesis characteristic of early universe, and are ejecting out large amounts, as much as 15 per cent, of helium. Otherwise, they are relatively new events compared to the age of the universe. The radiation is believed to be coming from the heating of the dust and the gas in the galaxy.

end of the spectrum. This is known as the **Doppler Effect or Shift.** The Doppler shifts of galaxies show that they are receding and that the universe is in a state of rapid expansion.

Theories of Space. Modern theories of the universe are based on this flight of galaxies, that is, on the assumption that matter is in a state of rapid expansion.

It is generally assumed that our universe started out as a superdense ball. It is argued that if the universe is now expanding (as Hubble has shown) it must have been, once upon a time, in a state of high compression. High compression means high density. We have, at present, no means of knowing how high the density of the original universe was.

The nearest guess is that the overall density of the universe, at that time, was comparable to the density of the nuclear fluid, tiny droplets of which form the nuclei of various atoms. * It is calculated that the density of the atomic nucleus is a hundred thousand billion times greater than the density of water. If the density of the primordial universe was of this order, it follows that each cubic centimetre of space (universe) at the time contained a hundred million tons of matter.

Big-Bang Theory. Abbe Georges Lemaitre, a Belgian astronomer-priest, explained this process of expansion, in what is known as *the big-bang theory*. He argued that billions of years ago, cosmic matter (universe) was in an extremely compressed state, from which expansion started by a primordial explosion. This explosion broke up the superdense ball and cast its fragments far out into space, where they are still travelling at thousands of miles per second. It is from these speeding fragments of matter that our galaxies have been formed. The formation of galaxies and stars has not halted the speed of expansion. And, as it happens in all explosions, the farthest pieces are flying the fastest.

The primordial explosion is the hallmark of the big-bang theory. But it also differs from other theories in two important respects.

Steady State Theory. This theory originally advanced by two astronomers,

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* George Gamow

Thomas Gold and Hermann Bondi, has since received support from the British astronomer Fred Hoyle. According to this theory, which is also known as the *continuous creation theory*, galaxies recede from one another but their spatial density remains constant. That is to say, as old galaxies move apart new galaxies are being formed in the vacancies. These new galaxies are formed from new matter which is being continuously created to replace old matter that, is being dispersed.

An interesting question arises here. How much new matter has to be created to compensate for the dispersion of matter by expansion? George Gamow suggests that if one hydrogen atom per litre of space is created once every billion years, it would be enough to replace matter, which is being lost continuously by expansion. This implies that comparatively very little creative work is involved in replacements.

Pulsating Universe. According to the Pulsating (Oscillating) Universe theory, advocated by Dr. Alan Sandage, among others, the universe expands and contracts alternately between periods running into tens of billions of years. Dr. Sandage thinks that some 12 billion years ago, a great explosion occurred in the universe and that the universe has been expanding ever since.

It is likely to go on expanding for 29 billion years more, when gravitation would halt further expansion. From then on, all matter would begin to contract or collapse upon itself in a process known as 'implosion' for 41 billion years into an extremely superdense state which will explode once again. This is the latest theory of the evolution of the universe.

Open or Closed? That the universe is expanding is today considered established. A question that remains unsettled is whether the expansion will continue for ever or whether the receding galaxies will some day stop and then reverse their motion, eventually falling together in a great collapse. The answer to this question determines the geometrical character of the universe, that is, it determines the nature of space and time. If the expansion continues perpetually the universe is 'open' and infinite; if it will some day stop and reverse direction, the universe is closed and of finite extent.

In order to choose between those possibilities, astronomers construct mathematical models of the universe and then attempt to find observable features of the real universe that would confirm one of the models and exclude all others. So far no single measurement has been made with enough precision to settle the question unambiguously.

OUTER SPACE

The difference between space and outer space is that space means the whole universe including the earth while outer space means all space other than the earth. In fact, outer space begins where the earth's atmosphere ends and extends on and on in all directions.

Outer space is infinite. Our terrestrial units of measurement hardly suit its dimensions. So we have evolved new units of measurement like the *Light Year* and the *Astronomical Unit*.

A Light Year is the distance covered by light in one year in vacuum travelling at a speed of 299,792.5 km* per second or about 186,282 miles per second. A light year is thus 5.88 million-million miles.

Astronomical Unit. It represents the mean distance between the sun and the earth, calculated on the data supplied by radars. This distance–the Astronomical Unit–has now become a key constant in determining distances in the solar system.

A.U. in terrestrial measurements is approximately 93 million (92,857,000) miles or 150 million (149,600,000) km In terms of space dimensions, we may say that a Light Year is made up of about 60,000 A.U.s.

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* This velocity was accepted as one of the Astronomical Constants by the International Astronomic Union in 1968

Tracking Outer Space. Light and sound are the two principal media through which we gather our impressions of the external world. Light is something we can see (visible) and sound is something we can hear (audible). This was considered an axiomatic truth till the end of the 18th century. As the 19th century broke, this simple belief was shattered. Astronomers and physicists learned that there are invisible lights and inaudible sounds.† The first break came in 1800 when the British astronomer William Herschel (1738-1822) discovered infra-red radiation.

The Solar Spectrum. When sunlight (white light) is passed through a prism, it is broken up into rays of different colours, like those of the rainbow. Traditionally, seven colours are known, which are epitomised by the acronym‡ VIBGYOR, that is, ***violet, indigo, blue, green, yellow, orange and red***. This is called the Solar Spectrum, with the violet colour at one end and the red colour at the other end. In studying the heating effects of the solar spectrum, Herschel placed a thermometer in each of the colours of the spectrum and an extra thermometer outside the spectrum at the red end.

The thermometer outside the spectrum (at the red end) showed a higher degree of heat than any other inside the spectrum. He called these rays ***infra-red*** (below the red) rays. In 1801 the German physicist Johann Ritter (1776-1810) discovered that the rays outside the spectrum at the violet end broke down silver chloride more quickly than the rays within the visible spectrum. These came to be called ***ultra-violet*** (beyond the violet) rays. It thus turned out that sunlight formed not only a visible spectrum but also an invisible one.

Angstrom Unit. In 1803 Thomas Young (1773-1829), a British physicist, showed that light travelled in tiny waves of varying wavelengths. The waves were too small to be measured by conventional scales. So Anders Angstrom (1814-1874), a Swedish physicist, evolved a new scale to measure wavelengths. He chose a unit equal to ten billionths of a metre. This has since become known as the ***Angstrom unit***. Ten ***Angstroms*** are equal to a ***milli-micrometre*** (a thousandth of a millionth of a metre) which in terms of modern SI units⁎ is equal to a ***nanometre***.

Wider Spectrum: The invisible ultraviolet and infra-red radiations remained inexplicable till James Clerk Maxwell (1831-1879), the British physicist, came out with his ***Electro-magnetic thesis*** in 1870. Maxwell argued that electricity and magnetism were different aspects of a single electro-magnetic field. Periodical variations in the electro-magnetic field produced electro-magnetic radiations of varying lengths. The visible light is only one part and a very small part of the electro-magnetic spectrum. He also postulated that there can be other invisible radiations much shorter than the ultraviolet at one end and far longer than the infra-red at the other.

The Maxwellian theory was vindicated when the German physicist Heinrich Hertz (1857-1895) produced electro-magnetic radiations with wavelengths much longer than the infra-red. These wavelengths were at first called ***Hertzian waves*** but eventually came to be known as ***radio waves***. Then in 1895, another German physicist Wilhelm Rontgen (1845-1923) discovered what he called X-ray radiation. The X-ray was later found to be much shorter in wavelength than the ultra-violet.

In 1896, the French physicist Henri Becquerel (1852-1905) discovered the phenomenon of ***radio activity*** . Becquerel did not at that time know why or in what manner this radio activity took place. Subsequently it was found that this radio activity was caused by the atoms of the heavy metal ***uranium*** giving off a constant emission of radiation and particles. It was further shown that this radio activity was also electro-magnetic in nature. Rutherford named it the ***gamma ray***. The gamma ray had a wavelength even shorter than that of the X-ray.

Photons. In 1905 Einstein showed that all forms of radiation travelled in wave packets, which acted like particles in some ways. He called these packets ***Photons***. The energy of the photons increased as the wavelength decreased. The wavelength is related to frequency, that is to say, the number of vibrations or waves or cycles per second.

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† See Sound.

‡ See Acronyms.

⁎ See International System of Units

The shorter the wavelength, the higher the frequency and the greater the energy. Thus gamma rays with the shortest wavelength below 0.01 nanometre) are the most energetic, the energy decreasing as the wave length increased, through X-ray (1 to 0.01 nano), ultra-violet (1 to 400 nanos) visible light in all the colours of the spectrum (400 nanos to 700 nanos) infra-red (700 nanos to 1 millimetre), micro waves (1 millimetre to 500 millimetres or 50 centimetres) to radio waves which have the longest wavelengths (50 centimetres to 3000 centimetres or 30 metres) and the lowest energy content (see Tables below).

Thermal Radiation. Every object which is at a temperature above *Absolute Zero*† (-273°C) radiates photons of all kinds. The average energy of the photons emitted increased with the temperature. We experience this heat during the peak period (noon) in visible light radiation. But even objects which are not hot enough to glow like the sun still radiate quantities of infra-red radiation. Our own bodies, for instance. Even objects below our body temperature i.e. cool bodies, radiate micro waves and longer radio waves. These radiations called *thermal radiations* can indicate the temperature levels of the objects emitting them.

Radio Waves. These are the radiations with the longest wavelengths, that is from 50 centimetres to as much as 30 metres. Objects in outer space that emit such radiations are called *radio sources*.

The atmosphere is like a sieve which allows only some wavelengths from outer space to reach us. Sunlight forms one group of wavelengths which come down through the atmosphere. This includes not only the visible light but also a part of the invisible light, namely the near ultraviolet (400 to 300 nanos) and the near infrared (700 to 2500 nanos). This is one of the windows that open out on outer space.

The other window is called the *microwave window*. It covers all wavelengths from one millimetre to 30 metres (see *Atmosphere*). The existence of the microwave window was not particularly noticed or studied till 1932 when Karl Jansky of the Bell Telephones announced that he had received radio messages from outer space. (see *Radio Telescopes*).

ASTRONOMY

Modern astronomy began with the Italian astronomer Galileo. In 1609 Galileo heard of the telescope made by the Dutchman Hans Lippershey. He improved upon it and constructed a similar instrument that could magnify upto thirty diameters.

It was this instrument, known as *refractor telescope*, that opened the field of optical astronomy. Galileo made several startling discoveries. He found the Moon's surface to be rugged, and the Pleiades to contain over 40 stars. He discovered four of Jupiter's moons and observed the sunspots.

In 1668 Newton invented a new instrument, *the reflector telescope*. In a refractor telescope, light is gathered by a large objective lens. In a reflector telescope a large curved mirror is used for this purpose. Both these types of optical telescopes are still in use.

The invention of the optical telescope was an epochal event in the history of astronomy. The instrument so caught the fancy of the astronomer and the layman alike, that all advanced countries vied with one another in building bigger and bigger telescopes.

Radio Astronomy came into being in the most unexpected manner. In 1931, Karl Jansky, an American radio engineer working in Bell Telephone Laboratory, noticed a steady stream of radiation coming in from outer space. It is strange that professional astronomers of the time paid little attention to this discovery. However, it attracted the attention of an amateur radio operator in U.S. Grote Reber, who set out by himself to learn

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† All objects that we know of have temperatures above Absolute Zero. See Cryogenics.

India's show-piece: the dome of the 2.3 metre telescope at Kavalur, North Arcot Dist., T. Nadu (see box)

more about this extraterrestrial phenomenon. He worked singlehanded for nearly ten years, studying the sky and analysing radiations. In 1937, he built the world's first ***radio telescope*** – a 31-feet 5- inches parabolic dish– and set it up in his backyard at Wheaton, Illinois. In 1940 he produced a radio map of the sky, the first of its kind in the world. Thus a new branch of astronomy was opened–Radio Astronomy.

The radio telescope is in may ways analogous to the optical telescope. It consisits of a large metal reflector fitted with an antenna. The metal reflector collects and focuses radio energy on the antenna which can be tuned to any desired frequency. A sensitive radio receiver picks up the radiation from the antenna and records it. This is analysed in a computer and studied.

All types of radiated energy are electromagnetic in nature. They differ from one another in wavelength and frequency. Much of the radiation like X-rays, gamma rays, ultra violet rays and the like are absorbed by the atmosphere and reflected back into space. All the same, a persistent stream of radiation reaches the earth. This includes a steady, weak but quite perceptible background radiation called ***continuum radiation*** which is being received from all parts of the universe. Recent research has shown that this background radiation may hold the key to the formation and destruction of stars and galaxies.

Satellite Age. In the sixties satellite technology took astronomical investigations farther afield. Until then astronomical studies were entirely ground-based. Now satellites made it possible to study astral phenomena from above the atmosphere. Thus astronomy came to be studied from two levels– from the ground and from above the atmosphere. This led to the emergence of many specialised fields in astronomy – X-ray, Ultraviolet, Gamma ray and Infra-red.

Radar astronomy was born in 1940, when a Hungarian physicist Zoltan Bay sent out a beam of micro waves to the moon and detected the return echo. It is really a part of radio astronomy since micro waves can rightly be considered a part of the electromagnetic spectrum.

Super Telescopes. A new generation of "super telescopes" being designed for mountaintops around the world could usher in a golden age of astronomy by the early Nineties.

At least seven mammoth optical telescopes–four on drawing boards in the United States– are now being planned, each of which will have more than twice the light-gathering capacity of today's biggest devices.

Behind the spurt in jumbo telescopes are several radical new ideas on how to build them. Ever since the dedication of the 200–inch Hale telescope –still the world's premier optical device–atop California's Mt. Palomar in 1948, astronomers have thought theyhave reached the technical and financial limits of big-telescope construction.

The reason: the mirrors. They effectively determine the power of a telescope. The bigger the reflector is, the more light it can collect from objects in space. Yet a mirror much larger than Hale's wouldn't hold its shape because of its weight.

Astronomers have been able to offset this problem somewhat with advances in light - detection systems. Electronic detectors now record more than 60 times the number of photons (massless subatomic particles that transmit light) collected by mirrors than those of 20 years ago. But advances in these systems are fast approaching their limits. Thus the need for bigger telescopes altogether.

One emerging idea is to use many pieces of glass fitted together like a mosaic instead of casting a single continuous concave surface. A version of the approach devised

INDIA'S GIANT STRIDE

There has been an explosion in astronomical research in recent times and India is in the forefront of the giant stride.

Of the three leading observatories in India, the oldest one (founded in Madras in 1972 and managed and run by the Indian Institute of Astrophysics in Bangalore) acquired the largest telescope in Asia in 1985. Erected at Kavalur, in Tamilnadu, at a cost of Rs.5 crore, it has a 93–inch telescope weighing 125 tonnes. Right from designing to erection, everything is indigenous.

Apart from this, three ground–based telescopes will be available in India in the coming years–an infra-red telescope being built by the Physical Research Laboratory, Ahmedabad, a millimetre wave radio telescope being built by Raman Research Institute, Bangalore and the Giant Metrewave Radio Telescope to be built by Tata Institute of Fundamental Research.

The Giant Metre Wavelength Radio Telescope (GMRT) will be the largest telescope of its kind in the world and will remain in the forefront of metre wavelength radio astronomy for a long time. With an estimated cost of Rs. 20 crore, it will have 34 parabolic cylindrical antennae, each 92 metres long and 35 metres wide, providing total collecting area of about 1,09,000 sq.metres.

The effective collecting area of GMRT will be about twice that of Arecibo Radio Telescope in Puerto Rico and eight times that of the very large array in New Mexico, USA.

Tata Institute of Fundamental Research already runs the Radio Astronomy Centre at Udagamandalam in the Nilgiris District in Tamilnadu. It has a radio telescope with an effective collecting area of about 8000 sq.metres. Designed and constructed indigenously in 1970, this telescope is capable of detecting very weak radio sources in the sky.

These facilities have been utilised by the scientists to study the variation of the angular sizes of radio sources with their intensities and to interpret them as evidence in support of the Big Bang hypothesis of cosmology as against the rival steady state hypothesis. The data obtained have also contributed significantly to the understanding of the physics of radio sources.

Large Radio Telescopes

Location	Description	Appro. Effective Area in Sq.m	In operation since
Jodrell Bank Manchester, UK	Dia. 76 m Parabolic dish	3×10^3	1957
Green Bank, West Virginia USA	Dia 92 m Parabolic dish	4.5×10^3	1962
Parkes, Australia	Dia. 64 m Parabolic dish	2.3×10^3	1962
Arecibo, Puerto Rico	Dia. 300 m Spherical dish	3×10^4	1964
Green Bank, West Virginia, USA	Dia. 42 m Parabolic dish	1×10^3	1965
Lake Traverse, Ontario, Canada	Dia. 46 m Parabolic dish	1.1×10^3	1966
Udagamandalam, India	530 m NS×30 m EW Parabolic Cylinder	8×10^3	1970
Effelsburg, West Germany	Dia. 100 m Parabolic dish	5.5×10^3	1972
Zelenchukskaya, North Caucasus, USSR	Ratan 600, 895 panels mounted on a circle of dia 576 m.	1.4×10^3	1974

by astrophysicist Jerry Nelson and colleagues at the University of California, is to be used in the new Keck Observatory.

World's Largest. This 390-inch telescope is likely to be the first of the new extra-large instruments to come on line. If completed by 1992, as envisioned, the Keck telescope would be the world's largest–nearly twice as big as Palomar and capable of detecting a candle on the moon. Developed by the University of California and the California Institute of Technology (Caltech), it will sit atop koa-studded Mauna Kea, an extinct volcano in Hawaii.

The main mirror of the telescope will contain 36 hexagonal pieces, each 6 feet wide and 3 inches thick. A computerised positioning system will keep them moving in concert with up to 100 adjustments possible each second, down to 1/1000 the width of a human hair. Although not yet tested on a large scale, the "segmented mirror" scheme should yield other benefits as well. Because the mirrors can sit on lighter supports, the 10–metre telescope will probably weigh less than one-third of the Hale telescope. A shorter focal length – and thus a stubbier barrel – will mean that a smaller dome can house it. (Domes can account for one-half the cost of an observatory).

GALAXIES

Galaxies are huge congregations of stars that hold together by force of gravity. They are so big that they have sometimes been called 'island universes'. Galaxies seem to be scattered in space. But there are many clustered into groups.

When the expanding material of the universe broke up in the first instance, billions of islands of gaseous matter were formed in space. These gaseous islands or *Proto-galaxies* rotated each with its own speed of rotation. Those with very low rotational speeds assumed nearly spherical shapes. Others assumed elliptical forms with varying degrees of elongation, depending on their rotational speeds. Most of these gaseous islands, however had such high rotational speeds that their bodies were flattened out into the shape of discs, from whose edges spiral arms streamed. The centre of the galactic disc was formed by a multitude of proto-stars rotating on regular circular orbits

Galaxies

Galaxy Name or Number	Visual magnitude	Distance (kilopsc)	Diameter (kilopsc)	Absolute magnitude
The Milky Way	-	-	30	(−21)
Large Magellanic Cloud	0.9	48	10	−17.7
Small Magellanic Cloud	2.5	56	8	−16.5
Ursa Minor system	-	70	1	(9)
Sculptor system	80	83	2.2	−11.8
Draco system	-	100	1.4	(−10)
Fornax system	8.3	190	6.6	−13.3
Leo II system	12.04	230	1.6	−10.0
Leo I system	12.0	280	1.5	−10.4
NGC 6822	8.9	430	2.7	−14.8
NGC 147	9.73	570	3	−14.5
NGC 185	9.43	570	2.3	−14.8
NGC 205	8.17	680	5	−16.5
NGC 221 (M 32)	8.16	680	2.4	−16.5
IC 1613	9.61	680	5	−14.7
Andromeda galaxy	3.47	680	40	−21.2
NGC 598 (M 33)	5.79	720	17	−18.9
Maffel I	11.0	1000	-	−19.0

around the centre of the galaxy, whereas the spiral arms were formed by highly diluted, dusty gas streamers which were caught in the general rotation and were twisted into the shape of spirals. The galaxies have thus come out in different shapes and sizes.

As the gaseous islands were settling down, local condensations-*proto-stars* developed at many points within the galaxy. These condensations began to contract under their own weight into dense gas spheres. As a result of this contraction, the temperature of the gas spheres rose steadily and their heated surfaces began to emit heat waves and then the shorter wavelengths of visible light. As the central atmosphere of these contracting proto-stars reached the ignition point–say 10 million degree centigrade–contraction stopped, thermonuclear reactions began and millions of bright burning globules of gas emerged–the stars. When the stars appeared, the originally cool and dark proto-galaxies were transformed into the bright stellar galaxies that they are today.

Structure. A structural analysis of the known galaxies brings out three major forms - *Spiral*, *Elliptical* and *Irregular*. Spiral galaxies have a central nucleus with great spiral arms trailing round it. The Milky Way and the Andromeda Galaxy belong to this group. A special type of spiral galaxies is what are called *barred spirals* which have a central bar as a nucleus. The spirals comprise some 80 per cent of the galaxies so far known. Elliptical galaxies show purely elliptical shape without any spiral arms. They range in shape from spherical ellipticals to extremely saucer–shaped ones and account for about 17 per cent of the known galaxies. Irregulars, as the name suggests, show no definite geometric pattern or shape.

It has been suggested that irregular galaxies are youthful galaxies, while spiral galaxies represent middle age and elliptical galaxies old age.

Cluster of Galaxies.* Most of the observable galaxies seem to be scattered in space more or less at random but there are numerous cases of galaxies clustering into groups, which may contain as may as several hundred individual galaxies. Our own galaxy, the Milky Way, belongs to a cluster of some 24 galaxies called the 'local group'. This group covers an area of about 3 million light years in diameter.

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* There is an unfortunate confusion of terminology between Clusters of galaxies and galactic clusters. The latter are the clusters of stars within the spiral arms of the galaxies see Constellations

The two nearest galaxies are the Large Magellanic Cloud and the Small Magellanic Cloud, so called after the world navigator Magellan who first spotted them. The Large Cloud is about 155,000 light years from us with a maximum diameter of some 40,000 light years and contains some 5 to 10 billion stars. The Small Cloud has only a population of 1 to 2 billion stars.

The two largest galaxies in the group are the Milky Way and the Andromeda galaxy, both of them spiral. Andromeda galaxy (M 31) is of special interest to us, because it appears that our galaxy and M 31 are actually approaching each other at a rather modest speed, some 50 km per second.

Local Group. The Local Group is a term loosely applied to indicate our galaxy and its nearby galaxies. The Group now (1980) numbers around two dozen. Some like the *Maffei* are even suspected to be outside the group.

The latest known member of the group is a *dwarf galaxy* discovered by the Siding Spring Observatory in Australia. It is in Carina and consists of a loose swarm of very faint stars. In appearance it resembles the Sculptor and the Fornax systems. It is estimated to be about 500,000 light years away.

THE MILKY WAY

The Milky way is our home galaxy. A peculiar feature of this galaxy is a bright band of light that runs almost in a perfect circle through it. Milky way belongs to a cluster of some 24 galaxies called 'the local group'.

As seen from the earth this band looks like a river of light flowing through the sky. Actually it is made up of millions of scintillating stars which from this distance seem to be placed in close proximity to one another. Modern westerners have called this river of light the Milky Way. The name is now applied to the galaxy as a whole.

The Milky Way had so fascinated our ancestors among all nations that they had given it pretty names and had woven fanciful legends about it. The Yakuts of Central Asia called it 'the footprints of God' and the Eskimos 'the path of white ashes'. The ancient Greeks called it 'the road to the palace of the Heavens', the Chinese, 'the celestial river' and the Hebrews, 'the river of light'. The ancient Indians, not to be outdone called it 'the Akash Ganga' or 'the Celestial Ganges'.

Akash Ganga. Legend has it, that in response to the insistent prayers of a devotee Bhagiratha, God Siva brought the Akash Ganga down and allowed a trickle of it to fall on the Earth. This trickle formed the earthly Ganga (River Ganges), which thus remains even today, sacred to Hindus all over the world.

The Milky Way is a spiral galaxy. The main body of the galaxy is a disc 100,000 light years across with a globular nucleus of about 16,000 light years in diameter, and far-stretching spiral arms (in one of which our solar system is located). The galaxy consists of over a hundred billion stars rotating about the centre in a stately average period of some 230 million years.

The principal gravitational force that controls this rotation is produced by the star clouds at the centre which have a total mass of about 50 billion suns. The mass of the entire Milky Way is calculated to be a little more than 100 billion times the mass of the Sun.

The stellar population of the Milky Way is made up of three categories of stars. First, there are the stars in the hub and spirals of the Milky Way. The sun belongs to this group of stars. These groups are called *Open or galactic clusters* (see *Constellations*). Beyond the disc and the open clusters, lie the halo stars. Many of these stars form miniature galaxies, containing tens of thousands of

Milky Way Not So big

The Milky Way is much smaller than previously believed and the sun and its planets are closer to the centre of the galaxy than anyone had thought, astronomers say.

The astronomers, using a new technique to figure distances, reduced the estimate of the size of the Milky Way, a spiral-shaped disc of 200 billion stars, from a generally accepted diameter of 100,000 light years to about 70,000 light years.

To get the resolution needed for the measurements, the astronomers pooled the reception of several radio telescopes in new Mexico, West Virginia, Massachusetts and California. Researchers from France and Sweden also took part in the project.

Dr. Mark J. Reid, a radio astronomer with the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, reported that a new geometric technique found the sun to be 23,000 light years from the centre of the galaxy.

For more than two decades, this distance was thought to be up to 33,000 light years.

stars. These are called *globular clusters*. They contain very old stars. Beyond the globular clusters there are several million individual stars, that run round rakishly on the outskirts of the Milky Way. All these form part of the galaxy.

Galactic Nucleus. The centre or the nucleus of our galaxy is so completely obscured by dust clouds that we cannot learn anything about it through optical telescopes. What little we know about the nucleus has been collected by radio telescopes.

Our galactic nucleus is about 32,000 light years from the Sun. It appears to be a rotating disc of gas. In this rotating disc massive activities are going on. One such scene of activity is very near the centre of the galaxy. Here, new stars are being born continually. The area is already crowded with full grown stars. The stellar density here is of the order of a million stars per cubic parsec (3.26 light years). It means that while we on earth, can see only one really bright star (Sirius) at night, any watcher in the central disc can see a million stars like Sirius, with a total luminosity of about two full moons. That is to say, the centre of our galaxy is perpetually flood-lit.

Dr. Joseph Weber of the University of Maryland thinks that a Black Hole dominates the centre of our galaxy. One of his experiments showed powerful gravity waves emanating apparently from our galactic centre. Strong gravity waves are generally associated with Black Holes. It is therefore quite possible that a Black Hole is holding our galaxy in its murderous grip.

STARS

Stars account for 98 per cent of the matter in a galaxy. The rest 2 per cent consists of interstellar or galactic gas and dust in a very attenuated form. The normal gas-density between stars (interstellar gas) throughout the galaxy, is about one-tenth of a hydrogen atom per cubic centimetre (cm^3) volume.

Stars tend to form groups. Lone stars going on their own are the exception rather than the rule in the universe. Single stars do not number more than 25 per cent of the stellar population. Double stars account for some 33 per cent. The rest are multiple stars. Antares in Scorpio is actually two stars. Capella and Alpha Centauri comprise three stars each, while Castor consists of six stars.

Binaries. Stars which appear single to the naked eye are sometimes found to be double stars or binaries in the telescope. These are two stars revolving around a common centre of gravity. They are found in orbital motion round each other, in periods varying from about one year to many thousands of years.

When the hydrogen in a star is depleted, its outer regions swell and redden. This is the first sign of age. Such stars are called Red Giants. Our star, the Sun, is expected to turn into a red star of this type in another 5 billion years. (See *Sun*)

Red Giants are appropriately named. They have gigantic dimensions. Betelgeuse, for example, has an actual diameter of 300,000,000 miles, about 350 times the diameter of the sun. Mira, another red giant, has a diameter of 400,000,000 miles.

Variable stars. These are stars that show varying degrees of luminosity. ***Delta Cephei***, the first of this type of stars, was noticed in 1784 by the deaf and dumb English astronomer John Goodriche. He found that Delta Cephei had a regular fluctuation of brightness every 5 days and 9 hours. Stars of fluctuating luminosity, thus came to be called *Cepheid Variables*. In stars of this type, high luminosity fluctuates between periods as small as a few hours to as long as 1000 days or more. Generally speaking, the slower the bright-dull-bright cycle, the higher is the luminosity.

Novae & Supernovae. These are stars, whose brightness increases suddenly by 10 to 20 magnitudes or more and then fades gradually into normal brightness. The distinction between the two types has not been precisely explained. It would appear that they differ in degree and not in kind. The sudden increase in brightness is attributed to a partial or outright explosion. In novae, it seems that only the outer shell explodes, whereas in supernovae the entire star explodes. Novae occur more frequently than supernovae.

Supernovae are stars whose brightness increase to 20 magnitudes or more. As Prof. C. F. Powell puts it, "The whole structure of the star is blown to pieces, it flares up in brilliance" so that its intrinsic luminosity for the first thirty days following the explosion is equal to about 1000 million of our suns."

A New Star Is Born

The birth of a star, one of the most awesome events in nature, has been observed directly for the first time, astronomers announced on July 15, 1986. University of Arizona researchers used a radio telescope to detect part of a gigantic gas cloud about 520 light-years from earth collapsing into a star-like object.

The astronomers say the object, at the centre of the collapsing cloud in the constellation Ophiuchus, appears to be an embryonic stellar core growing from material it is gathering from the cloud. Scientists have long known that stars, such as the sun, continually form out of interstellar clouds of gas and dust, and suspected that the process involves fragments of these clouds uncontrollably collapsing under their own weight. But until now no one has observed this process happening, despite years of looking, said mr. Charles Lada, Mr. Philip Maloney, Mr. Christopher Walker and Mr. Erick Young, all from Arizona.

The astronomers said the embryonic star was first observed several years ago by the Infra-Red Astrophysical Satellite (IRAS) and looked like a good star-formation candidate for later obserberation. The object was considered unusual because it produced 20 times as much energy as the sun, while being incredibly cold.

Using the 12-metre-diameter radio telescope of the National Radio Astronomy Observatory on Kitt Peak, near Tucson, the scientists could observe the object through the obscuring wall of interstellar dust that prevents visual observation.

The astronomers said that in about 100,000 years, the embryonic star would have accumulated about as much mass as the sun. At that time, the formation process should end and "a new star will emerge from the cloud as visible object".

Nearest Stars

Name/Number	Distance (light years)	Magnitude	
		Apparent	Absolute
Proxime Centauri	4.2	10.5	15.5
Alpha Centauri	4.3	0.06	4.7, 6.1
Barnard's Star	6.2	7.7	13.4
Lalande 21185	8.0	7.6	10.7
Wolf 359	8.1	13.5	16.5
Sirius A	8.7	−1.58	1.3
Inne's Star	9.6	11.7	14.4
B.D.-12 degrees 4523	9.9	9.5	12.1
Kapteyn's Star	10.2	9.2	11.7
Ross 248	10.2	13.8	16.3
Ceti	10.2	3.6	6.1
Procyon	10.4	0.48	3.0
Eridani	10.5	3.8	6.3
61 Cygni	10.7	5.6	8.0
Lacaille 9352	11.2	7.4	9.7
2398	11.3	8.8	11.1
Groombridge 34	11.6	8.1	10.4
Indi	11.6	4.7	6.9
Kruger 60	12.5	9.3	11.4
Van Maanen's Star	12.8	12.3	14.3

About one star in 100 explodes like this. In our galaxy of some 100 billion stars, a supernovae explosion may occur once in hundred years. An exploding star or supernova releases more energy than a billion suns and ejects a lot of matter into space, at a velocity very near to the velocity of light. Some supernovae may leave a super dense core which rotates at high speed and may thus transform itself into a pulsar.

Four supernovae had been identified in historical times, all before the invention of the telescope. They were noted in 1006, 1054, 1572 and 1604.

The 1006 and 1054 supernovae were identified by oriental astronomers. The 1006 supernova appeared towards the end of April 1006, in the constellation of Lupus. Initially, the star was as bright as Venus. It continued to be visible at night for longer than a year. Although no visible remnant of this supernova is traceable, radio emissions from its remnant were identified in 1965. The 1054 supernova, of which detailed descriptions survive in Chinese chronicles, is described "as a guest star". It is said that this supernova outshone the sun for many days and turned night into day. The Crab nebula is taken to be the remnant of this supernova.

The supernovae of 1572 and 1604 were noted by two European astronomers, Tycho Brahe and Johannes Kepler. According to Tycho, the 1572 supernova was brighter than any other fixed star and even brighter than Jupiter. The remanant of this supernova was not traced until 1952. Later, the remnant was located as a strong source of X-rays. The supernova of Kepler (1604) attained a brightness equal to, if not greater than, that of Jupiter. It was visible by day for a month and by night for a whole year. The remnant of this supernova has also been identified as a radio source.

The most recent supernova explosion in our galaxy took place in 1700 in the constellation of Cassiopeia. Strangely enough, this explosion had not been noticed by any astronomer. This supernova was identified in 1948 from its relic, an intense radio source named Cassiopeia A.

SOLAR SYSTEM

The solar system is centred in the Sun. The Sun is the head of a family of 9 planets—*Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune* and *Pluto*—not less than 46 satellites accompanying the planets hundreds of asteroids and thousands of comets.

The Solar system is tucked away in a corner of the Milky Way at a distance of about 30,000 to 33,000 light years from the centre of the galaxy.

The solar system originated in a primitive solar nebula–a rotating disc of gas and dust. It is from this rotating disc that the planets and the rest of the solar system evolved.

Planets. The term *planets* is derived from the Greek word *planetes,* meaning wanderers. Unlike the stars, which are visible in their fixed positions in the sky always, the planets shift their positions and sometimes even disappear from view. Therefore they came to be called planets or wanderers. The first known planets were named after the Roman gods- ***Mercury, Venus, Mars, Jupiter*** and ***Saturm***. The other planets, when they were discovered later, were also named according to the old pattern- ***Uranus, Neptune*** and ***Pluto***.

The planets are divided into the inner planets and the outer planets. The inner planets are Mercury, Venus, Earth and Mars. The Earth is the largest of the inner planets and the densest of all planets. All the inner planets are dense rocky bodies and are collectively called terrestrial planets, because they resemble the Earth. The outer planets, Jupiter, Saturn, Uranus and Neptune are very big, with large satellite families. They are composed mostly of such elements as hydrogen and helium. These planets are called Jovian, after Jove, the Greek name for Jupiter, because they resemble Jupiter in many things. All of them rotate furiously, wear dense atmospheres and consist of far lighter elements than the earth—like–or terrestrial inner planets.

The outermost planet Pluto is in a class by itself. It is supposed to be a dense planet like the inner planets, although it is the farthest of the outer planets.

Rotating on their own axis, the planets revolve round the sun in long elliptical orbits.

Solar System-Planets

	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neputne	Pluto
Mean Dist. from the Sun (million km)	57.9	108.2	149.6	227.9	778.3	1427	2869.6	4496.6	5900
Mean Dist. from the Sun (Astronomical Units) (Earth=1)	0.387	0.723	. 1	1.254	5.203	9.539	19.18	30.06	39.44
Period of Revolution	88 days	224.7 days	365.26 days	687 days	11.86 years	29.46 years	84.01 years	164.8 years	247.7 years
Period of Rotation	59 days	−243 days*	23 h 56 m. 4 s.	24 h 37 m. 23 s.	9 h. 50 m. 30 s.	10 h. 40 m.	−11h.*	16 h.	6 days 9 h.
Inclination of Axis (degrees)	28	3	0	1.9	1.3	2.5	8	1.8	17.2
Equatorial Diameter (km)	4880	12104	12756	6787	142800	120000	51800	49500	6000(?)
Mass (Earth=1)	.055	.815	1	108	317.9	95.2	14.6	17.2	.1(?)
Volume (Earth=1)	.06	.88	1	.15	1316	755	67	57	.1(?)
Density (water=1)	5.4	5.2	5.5	3.9	1.3	.7	1.2	1.7	(?)
Surface Gravity Earth=1	.37	.88	1	.38	2.64	1.15	1.17	1.18	(?)
Satellites known	0	0	1	2	16	21	6	4	1

* Retrograde

THE SUN

The Sun is one of the stars in the Milky Way. Modern estimates place the Sun at a distance of about 32,000 light years from the centre of the galaxy. The Sun and the neighbouring stars generally move in almost circular orbits around the galactic centre at an average speed of about 250 km per second.

The Sun at this rate takes 250 million years to complete one revolution round the centre. This period (250 million years) is now called a *cosmic year*.

Red Giant. Like all other stars, the Sun is composed mainly of hydrogen. Its energy is generated by nuclear collisions in its interior. It is calculated that the sun consumes about a trillion pounds of hydrogen evey second. At this rate, it is expected to burn out its stock of hydrogen in about 5 billion years and turn into a red giant. The prospect is frightening.

When the sun turns into a red giant, it would have swelled a hundred times in diameter and increased a thousand times in brightness–bright red. It will then occupy about 25 per cent of the horizon. The nearest planets, Mercury and Venus, would melt. The oceans of the earth would evaporate and disappear. The earth would remain a barren rock, heated to the melting point of lead. All life on earth would cease. The Sun will survive as a red giant, for about a hundred million years more, slowly dissipating its enlarged outer shell leaving a tiny core. This core will be a faint, white dwarf-sun no larger than the present planet Mars. Around this tiny star, the burnt-out earth will continue to revolve.

Structure. The glowing surface of the sun, which we see, is called *Photosphere*. Above the photosphere, is the *Chromosphere*, so called because of its reddish colour. Beyond this layer is the magnificent *Corona* of the sun which is visible during eclipses.

Between the chromosphere and the corona, spectroscopic investigations have identified a distinct, very narrow boundary zone known as the transition region. The temperature of the photosphere is about 11,000°F; that of the chromosphere about 18,000°; that of the transition region about 180,000°; and that of the corona, which extends far into space, about 2,700,000°, hot enough to emit X-rays. (The density of the gas in each layer decreases with increasing altitude, just as the earth's atmosphere thins with height. The corona, accordingly, is the least dense of the Sun's layers)*

At the core of the sun where thermonuclear reactions take place the temperature level is around 15 million degrees K. The density at the core is estimated at a hundred times that of water. Outside the core is the convection zone. Here, like the boiling water in a kettle, turbulent motions of gases transport the energy that is generated in the core towards the photosphere.

The visible white light of the corona is made up of a continuum of colours, such as violet, indigo, blue, green, yellow, orange and red. Super-imposed on this continuum are hundreds of dark lines called the *Fraunhofer lines*. Each line indicates some element present in the solar atmosphere. The intensity and width of the lines reveal the temperature and density of the element.

Prominences & Flares. The sun is constantly emitting streams of its substance (mainly hydrogen) as protons (nuclei of hydrogen atoms) in all directions. Sometimes these emissions are massive. They are then seen as *prominences* which send huge bouts of incandescent material upward from the sun's surface. Sometimes these eruptions roll out of the atmosphere of the sun for many miles, when they are seen as solar *flares*. The solar flares are spectacular–hot ionised gas rolling out as enormous clouds, 20 to 40 times the size of the earth at speeds of around 100 km per second through the outer layer of the sun's atmosphere, the Corona. Some of the most spectacular solar flares seen in recent years occurred on Feb. 28, 1942. Nov. 19, 1949 and Dec. 13, 1971.

Solar Wind. A less spectacular but persistent stream of protons is blowing out of the corona and sweeping over the whole solar system. In 1958, the American physicist, Eugene Norman Parker, called this outward stream of protons the *solar wind*. Recent researches through satellites have shown that the solar wind is made up of a plasma** that is, ionised gas, mostly hydrogen and helium, containing nearly an equal number of protons and electrons. It flows outward from the Sun at supersonic speeds, around 400 km a second. Apparently, this wind sweeps through the whole solar system to a distance of 40AUs from the Sun which coincides with the very limits of the planetary orbits.

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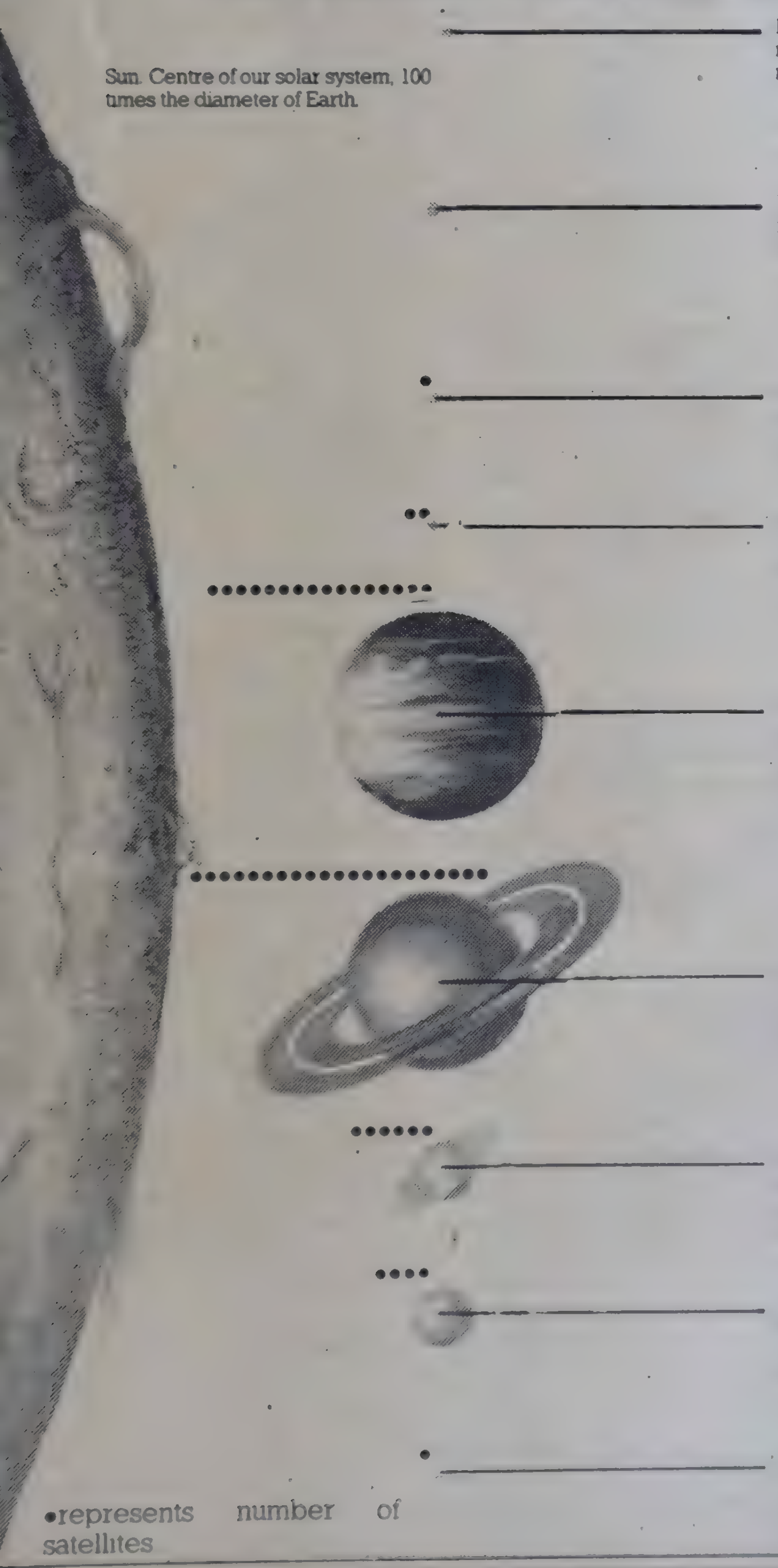
* See *Natural History* 1/83

** Plasma is a fourth state matter (in addition to solids, liquids and gases) where the gases are ionised. An *Ion* is an atom or group of atoms which has gained or lost one or more electrons and thus carries a negative or positive charge. *Proton*, the nucleus of the hydrogen atom without its electron, is a *hydrogen ion*, *Alpha particle*, the nucleus of the helium atom without its electrons, is *helium ion*.

THE PLANETS' POSITIONS IN SPACE



Sun. Centre of our solar system, 100 times the diameter of Earth.

Mercury. Diameter 4,880 Km (3,030 miles) Nearest planet to the Sun-57.9 million Km. (36 million miles)

Venus. Diameter 12,104 Km (7,521 miles) Lies 108.2 Km (67 million miles) from the Sun.

Earth. Diameter 12,756 Km. (7,296 miles). Has one satellite, the Moon, and is 149.6 million Km (93 million miles) from the Sun.

Mars. Diameter 6,787 Km (4,200 miles). Last of the rocky planets; has two satellites and is 227.9 million Km. (141.5 million miles) from the Sun.

Jupiter. Diameter 142,800 Km (88,700 miles). Separated from Mars by a vast belt of asteroids. It has at least 16 satellites and lies 778.3 million Km (483.5 million miles) from the Sun

Saturn. Diameter 120 000 Km (75,000 miles). Circled by at least 21 satellites, lies 1.427 million Km (885 5 million miles) from the Sun

Uranus Diameter 51 800 Km (32,200 miles) Lies 2.869 6 million Km (1,782 5 million miles) from the Sun and has six satellites

Neptune. Diameter 49 500 Km (31 000 miles) With its four satellites it lies 4 496 6 million Km (2 800 million miles) from the Sun

Pluto Diameter 3 000 Km (2000 miles) one satellite The outermost planet averaging 5 900 million Km (3 600 million miles) from the Sun

•represents number of satellites

Owing to the sun's rotation, the solar wind travels in spirals and carries with it magnetic fields. The Earth's magnetic field–the magnetosphere–acts as a shield against the ever-blowing solar wind and deflects it away from the earth. Nevertheless, particles of solar wind sometimes pierce the magnetic shield and enter the upper atmosphere, where, like the solar flares, they cause auroral displays.

The solar wind distorts the shape of the magnetosphere. The magnetosphere extends to a distance of 64,000 km above the earth–10 times the radius of the earth. On that part of the earth exposed to the sun (the sunlit side), the solar wind sweeps along the magnetopause past the earth. On the other side of the earth (the night side), the solar wind converges again and compresses the magnetic field into a plume or tail, more or less like what it does to comets. The tail thus formed extends to over six million km on the night side of the earth. The particles of the solar wind and also those from the deep space are trapped in the tail and travel back and forth endlessly.

Sunspots. These are dark patches noticed on the surface of the sun. They appear dark because they are cooler (around 1500°C) than the surface of the sun which has a temperature of about 6000°C. The largest spot ever measured (April, 1974) covered 7000 million sq. miles or approximately 0.7 per cent of the sun's visible surface. The life periods of these spots also vary. They may last from a few hours to many weeks.

Solar Statistics

‡Distance from the Earth	149.8 million km.
Absolute Visual Magnitude	4.75
Diameter	1392000 km
Core Temperature	15000000 K
Photosphere Temp.	5770 K
Rotation as seen from the Earth	25.38 days (at the Equator) 33 days (near the poles)
Chemical Composition	Hydrogen 71% Helium 26.5% Other Elements 2.5%
Age	About 5 billion years
Expected lifetime of a normal star.	About 10 billion years

‡ The mean distance from the Earth to the Sun (150 million km) translated into flying hours means that a jet aircraft capable of 1000 km/hr. would need more than 17 years of non-stop flying time to reach the Sun.

They show strong magnetic fields and reach a maximum every 11 years. During the maximum of a sun-spot period, the sun shows marked activity in shorter 'Wave lengths' like X-rays and ultraviolet radiations. Frequent solar eruptions and solar flares occur. These produce great reactions on the earth and its atmosphere such as ionospheric disturbances, magnetic storms, interruptions of radio communications, unusual auroral displays and a lowering of the average cosmic ray intensity.

Polar Auroras. There are two auroras, the ***Aurora Borealis*** or Northern Lights and the ***Aurora Australis*** or Southern Lights. These are lights that sweep across the sky in waves or streamers or folds. They are very often multi-coloured and provide one of the finest spectacles in nature. They occur in the Arctic and the Antarctic regions. But the Northern Light can be seen as far south as New Orleans in America and the Southern Lights as far north as Australia.

The auroras are chiefly caused by sunspots, which are magnetic storms on the surface of the sun. These storms discharge electrified particles into space. The Earth's magnetic poles attract these particles. Consequently, the north and south poles are the radiating centres of these electromagnetic displays.

The electrified particles from the sun cause gases in the upper atmosphere to vibrate and glow in colours peculiar to them, just as a neon sign glows when electric charges pass through it. The causal relation between sunspots and auroras has been doubted, because the interval between the two was always erratic and never uniform. This has now been explained by the discovery of the magnetosphere.

Magnetosphere. The magnetosphere is the earth's magnetic shield. It was at first called the ***Van Allen Belts*** after the American physicist, James Van Allen who discovered them in 1959. Van Allen in analysing the data from the earlier Explorer and Pioneer rockets found two belts of high ntensity radiation in the upper atmosphere. Pioneer 12 later showed that these belts were a part of a larger band of radiation called the magnetosphere. It extended far out to about 40,000 miles from the earth's surface.

Here the protons and electrons that shot out from the sun are caught and held by the magnetism of the earth. The upper belt with its centre, some 1500 miles from the earth, does not touch the atmosphere.

THE PLANETS

Mercury is the planet closest to the Sun and the smallest. It was believed that the period of Mercury's rotation on its own axis corresponded with its period of revolution, like that of the Moon. Recent radar readings, however, have shown that Mercury rotates on its own axis in 58.65 days while it takes 88 days to complete one revolution round the Sun.

This means that Mercury spins three times (3×58.65 days) for every two revolutions (2×88 days) round the Sun. The result is that when Mercury is in a most favourable viewing position, we see nearly the same face with the same markings. This is how the mistaken notion arose that its period of rotation was the same as its period of revolution.

According to Gérard Kupier, Mercury was probably twice as massive originally but the Sun evaporated away half its substances. The lighter, more volatile elements escaped, leaving a heavy planet, that is probably about 30 per cent silicates or rock and 70 per cent metals. It is 5¼ times as dense as water. Even today Mercury bathes constantly in the ferocious heat of the Sun. When it is closest to the Sun, temperatures reach 650°F on the equator though they probably drop during the long night to minus 300°F.

It is doubtful if Mercury has an atmosphere. With low gravity (one-third of the Earth's) and high temperatures, atoms and molecules of almost all gases must have escaped into the interplanetary space leaving Mercury devoid of atmospheric gases.

Venus. Venus, the planet closest to the Earth, is also the brightest object in the sky, barring, of course, the Sun and the Moon. Named after the Roman goddess of beauty, Venus is popularly known as a star – as the *Evening Star* and the *Morning Star.* It is slightly smaller than the Earth, being some 300 miles less in diameter. Venus, unlike most other planets, rotates backward. Because of the combination of the slow backward motion and the 225 days it takes the planet to make one orbit round the Sun. Venus sees the Sun rising in the west every 117 days.

Many of the popular notions regarding Venus have been radically altered by the space probes of Venera 4 (Oct. 1967), Venera 5 and 6 (May 1969), Mariner 2 (Dec. 1962) and Mariner 5 (Oct. 1967).[†] These probes have proved that Venus is a very hot planet – possibly the hottest of planets. Its temperature at the equator may go as high as 1000°F. At such a temperature, lead, tin and zinc will melt and a number of compounds will vaporise. But at the top layers of Venusian clouds temperatures drop to minus 35°F. Here, we have a most interesting phenomenon – a red hot planet wrapped in clouds of ice, with freezing temperatures above and boiling temperatures below.

A curious feature of Venus discovered by the Russian Venera series 7 and 8 is that both the night and day temperatures are nearly the same. This means that heat is being transported from the day side to the night side. Strong winds in the higher atmosphere seem to be the carriers of heat.

While the highest clouds on the Earth seldom go above 10 miles, Venus has a thick layer of clouds, about 35 miles high. They

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[†] Later probes by US and USSR have materially added to our knowledge of the planet. The latest probes were in Dec 1978–Pv (Pioneer Venus) 1 & 2, US, and Venera 11 & 12, USSR.

Probe To Mars In 1987

The Soviet Union will launch two space probes from the Baikonur cosmodrome in 1987 to study the planet Mars and its satellites.

The probes would reach the planet after 200 days of flight. The international project, named after a martian satellite, Phobos, will involve experts from socialist countries as well as Austria. West Germany, France, Sweden and the European Space Agency.

"The unmanned probes will study the surface, atmosphere, ionosphere and magnetosphere of the planet. Television pictures of the planet, detailed information about mineralogical composition of rock and its radiophysical properties will be received by January 1989. A thermal map of the planet will also be compiled.

The probes will approach the martian satellite within 30-50 metres and investigate it.

Long-term automatic modules will be jettisoned to Phobos in April 1989 to conduct "live reporting" from its surface. The satellite will be subjected to long-wave, laser and ion irradiation. The powerful "x-ray examination" will help determine the elementary and isotopic composition of the rock structure of phobos.

Phobos and the other martian satellite, Deimos, are huge shapeless masses of rock, marked by craters. In all likelihood, they belong to the type of asteroids considered to be primaeval objects in the solar system.

block much of the sunlight.

The atmosphere of Venus is also unique, consisting as it does almost entirely of carbon dioxide (90-95 per cent). It has a pressure of a hundred terrestrial atmosphere (100 times the pressure of the Earth's atmosphere). This is equal to the pressure of water more than half a mile under the sea.

Venus has no satellites like Jupiter, no rings like Saturn and no ice caps like Mars. It has a very weak magnetic field, 3/10,000 of the Earth's magnetic field and has no radiation belt like Van Allen Belt.

The Earth

(See the Earth)

Mars, named after the Roman god of war, is the fourth planet from the Sun. When Mars is favourably situated it is brighter than most of the stars and is definitely red, which has earned for it the surname Red Planet. Mars has polar caps similar to those of the Earth and because the Martian axis is tilted at almost the same angle as the Earth's, its polar regions are exposed to sunlight in alternation, giving each hemisphere summer and winter.

The relative orbits of Mars and the Earth bring them very close – a little more than 35 million miles – on two occasions about 2 years apart and then remove them far apart for another 15 years. In September 1956, Mars paid the second of the current series of close visits to the Earth and the third in 1971.

The pictures that Mariner 9 has sent down show that Mars is internally alive and more like the Earth than the Moon, with volcanoes, greater than any on the Earth, canyons and dusty basins, jumbled uplifts and fractures

Mightiest of the Martian mountains is *Nix Olympica* (the snow of Olympus), a volcanic mountain that embraces a vast caldera or crater 40 miles across. It is the highest point on Mars, standing some 15 miles above the plain, nearly three times as high as Moun Everest.

The Viking mission to Mars in 1976 was intended to find out if there were any signs of life on Mars. Viking I landed on Mars on July 20, 1976 and Viking II on Sept. 3, 1976. The experiments conducted by them have shown that there is no sort of life on Mars.

Mars has two small satellites, which have been named *Phobos* (Fear) and *Deimos* (Terror), after the legendary attendants o the war god, Mars.

Jupiter is the giant among the planets. It mass is 71 percent of the total mass c planets. It has one and a half times th volume of all the other planets combined. Bu its mean density is only one-fourth of th arth's – a low value characteristic of all the ovian planets.

upiter appears to have stopped halfway to ecoming a star. It was too massive to solidify s a planet but not massive enough to levelop 'nuclear fusion' and become a star. It as thus come to possess both stellar and lanetary characteristics. Jupiter emits andom bursts of intense radio energy at ong wave lengths. It is the most powerful adio object in the solar system, next to the un. No other planet is known to possess adio energy of its own. In all other respects upiter resembles the other planets.

Much of Jupiter's mass is made up of atmos here 25,000 miles deep. The atmosphere onsists largely of hydrogen and helium which explain the low density of the planet- 1.34, roughly one-fourth of the Earth's density. Methane and ammonia which are formed when hydrogen joins with carbon and nitrogen respectively are also present in the atmosphere. It is thought that Jupiter has the primordial atmosphere of the Earth–hydrogen, methane, ammonia and water–from which life originated on Earth. It is quite possible that a similar process of life will have been started on Jupiter.

The atmosphere of Jupiter is marked by a series of stripes which go round the planet. Astronomers have counted 5 bright stripes and 4 dark gray stripes.

Jupiter is hot inside. At th core, temperature may go upto 25000°C which is more than four times the surface temperature of the Sun (6000°C).

Jupiter has 16 satellites. The biggest four satellites. Io Europa, Ganymede and Callisto, were discovered in 1610 by Galileo. They are now collectively called Galilean satellites. The 14th planet discovered in 1979 is the smallest of the satellites. It has tentatively been named 1971 J1. It is only a few dozen km in diameter and is about half-way between the surface of Jupiter and the orbit of Amalthea. Amalthea and the four Galilean satellites travel in circular orbits around Jupiter. The remaining satellites are much smaller and travel in irregular orbits.

aturn. Saturn is the outermost planet isible to the naked eye. With a rocky core of he size of the Earth, Saturn is the second argest planet (next to Jupiter) but the least dense. It has a density of only 0.69 less than that of water.

Compared to its neighbour Jupiter, Saturn looks unexciting. The two planets are considered very similar–giant balls of hydrogen and helium with hot interiors that provide much of the heat that drives their winds and determines their weather. However, Voyager I has shown that Saturn does have a minor version of Jupiter's Great Red Spot. It has also white oval s and bands of lighter and darker clouds like Jupiter's. Both planets have strong Jet Streams racing round their Equators (see *Atmosphere*) Saturn's Equatorial jet is, however, three times broader than Jupiter's. Its winds are three times stronger too– a thousand miles an hour.

The most spectacular feature of Saturn is its system of rings. This has mystified all astronomers from Galileo downwards. The discoveries of Voyager I have only depened the mystery. Says Bradford Smith, the leader of the team that scans Voyager images, "The mystery of the rings keeps getting deeper and deeper until we think it is a bottomless pit." The Voyager has upset practically all notions of Saturn previously accepted as correct.

Moons & Moonlets. Saturn has the biggest family of satellites–-a total of 21. Of these 10 were known by 1976. The others were identified by earth-based telescopes and Voyagers I & II from 1979 to 1981

Titan, Saturn's biggest satellite, is known to have an atmosphere. But since Titan is covered up by dense clouds, it is not possible to see what its surface looks like. Titan's atmospheric pressure is 1.6 times that of the Earth. Titan's diameter is also found to be only 5140 km, much lower than the previous estimtes.

Uranus. Uranus is not visible to the unaided eye, but may be seen through good field glasses. It has five satellites, *Ariel, Umbriel, Titania, Oberon* and *Miranda.* All of them are comparatively small

In 1977 astronomers aborad the Kupier Airborne Observatory found that Uranus is surrounded by a system of five very faint narrow rings These rings named Alpha, Beta, Gamma Delta and Epsilon were at distances of [illegible] 2846[illegible] [illegible] and [illegible]0090 miles respectively from the centre of Uranus. The four inner lines– Alpha, Beta, Gamma and Delta– are each about 8 miles wide while Epsilon is many times broader.

All rings are well inside 40,000 miles from Uranus, which is the Roche's limit for Uranus, that is, the limit within which a large satellite would be torn apart by tidal forces.

Uranus was identified as a planet in 1781 by William Herschel and has completed only two revolutions round the Sun since its discovery. This chill methane planet is 14½ times as massive as the Earth and has a temperature of about 170°C. It takes some 84 terrestrial years to circle round the Sun and its day is 10 hours 49 miniutes. The equator of Uranus is tilted at 98° of the plane of its orbit with the result that it practically rolls on its sides as it revolves round the sun and exposes its polar regions (north and south) to whatever light and and warmth the Sun gives in periods of 42 years each.

Neptune. Neptune, between 2900 and 2700 million miles from the Earth, is also visible through good field glasses.

The planet was discovered in 1846, as a result of calculations made independently by two astronomers, Adams in England and Le Verrier in France. These calculations gave the position of an unknown planet which was responsible for the perturbations in the motion of Uranus. The planet was found on 23rd Sept. 1846 in the indicated neighbourhood by Gottfried Galle of the Berlin Observatory. It appears to be a pale green orb, no brighter than an 8th magnitude star.

Neptune has four satellites. Of these *Triton* goes round in a retrograde orbit.

Pluto. Pluto the outermost planet and removed from the earth by a distance between 4700 and 2700 million miles is visible only through a telescope. This planet was finally located in February 1930 after a long arduous search by C.W. Tombaugh at the Lowell Observatory, Arizona, (USA).

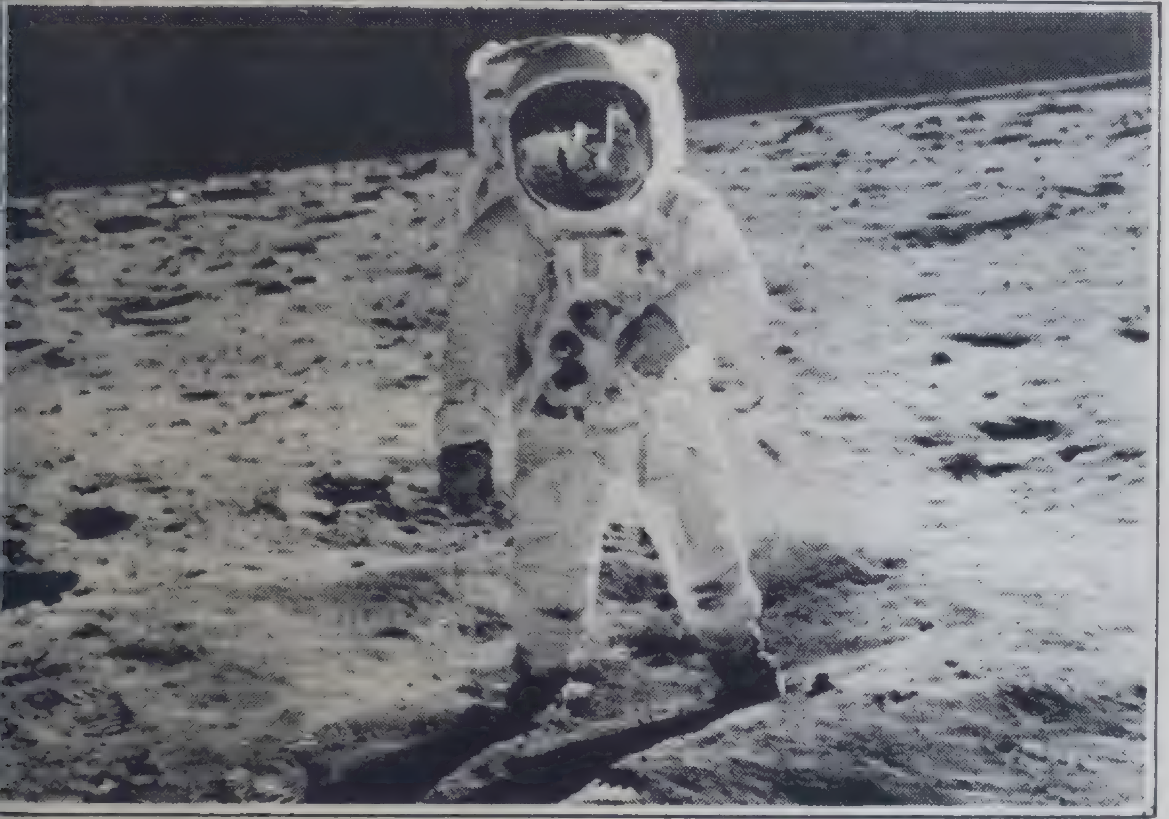
Pluto is a tiny sphere, a little larger than Mercury and revolves eccentrically between 4600 and 2700 million miles from the Sun. It has one satellite. Its orbit is interlaced with that of Neputne. This has led some astronomers to believe that it is "a run-away" satellite of Neptune. An existing Neptunian satellite. Triton, also appears to have escaped Neptune's hold in the first instance but had been brought back. This is supposed to be the reason why Triton goes about in a retrograde orbit, opposed to that of Neptune

THE MOON

The Moon is the only satellite of the Earth. But it is a satellite of distinction. For, it is the only satellite in the solar system far too big to be a satellite. All other satellites have sizes ranging below ⅛ of the sizes of mother planets. But the moon is about ¼ of the size of its mother planet, the Earth.

The incompatibility of the relative sizes of the Earth and the Moon, and their separate existence at such close quarters led to the conjecture that the Moon is not a true satellite but was captured by the Earth during a close approach to the Earth. This theory known as the *Spouse Theory* states that the Moon came from elsewhere in the solar system and sweeping too near, it was snared by the Earth's gravity and "married"- that is, locked into orbit. The second theory known as the *Daughter Theory* says that the Earth once rotated so rapidly that it became blimp-shaped and was torn into two, the smaller blob, entering into orbit as the Moon. The third theory–the *Sister Theory* –suggests that the Earth and the Moon were formed more or less at the same time from the original wheeling cloud of cosmic gas that ultimately condensed into the planets and the satellites.

The Moon has a diameter of 2159 miles as against the Earth's 7900 miles. But it has a surface less than half that of the Atlantic Ocean. Therefore its gravitational pull is about one-sixth of the Earth's. Because the orbit of the Moon about the Earth is no circular but elliptical, the maximum distance (apogee) which the Moon may keep from the Earth is 252710 miles and the minimum distance (perigee) 221463 miles. The Moon



Capt. Neil Amstrong, the first man to set foot on the Moon on July 21, 1969.

evolves round the Earth in 27⅓ days (27 ays 7 hours 43 minutes and 11.47 seconds) nd rotates on its own axis in exactly the ame time. This is why we see only one side f the Moon.

Topography. To our unaided vision ie near side (front side) of the Moon seems o be made up of bright and dark patches. he bright parts are the mountains and ighlands that catch the Sun's rays, while the arker patches are low-lying plains. These vere once thought to be seas (marias) and amed accordingly, though the Moon is evoid of water. The craters are depressions aused by the onslaught of meteors. They ary in size. As if to make up for lack of ceans such as we have on Earth, the Moon as raised high sharp-peaked mountains, nany of them rising to 20,000 ft. The highest f these are Liebnitz Mountains, near the loon's south pole, which rise to 35,000 ft., gher than Mount Everest.

The Moon has no atmosphere, as its ravitational power is too weak to hold down ases. This causes many strange phenomena. There is no twilight, the day dawning suddenly, as there is no atmosphere to be lit up before the Sun comes over the horizon. There is no sound either, as sound is a vibration transmitted through air.

Temperature on the Moon reaches extremes. During daytime the temperature rises to 100°C, at night it comes down to minus 180°C.

The Moon along with the Sun is responsible for the tides. The Moon, being nearer to the Earth than the Sun, exerts a greater influence on the tides. It takes only 1.3 seconds for moonlight to reach the Earth, whereas sunlight takes as much as 8 minutes 16.6 seconds to reach us. This being so, the ratio of lunar and solar power for tide-raising is 11 to 5 (Also see *Hydrosphere*).

Man on Moon. Apollo XI which landed two men on the Moon in July 1969 has blazed a new trail in man's exploration of space. It has enabled man to step on to the surface of the Moon–a possibility that the wildest legends of early times had discounted. USA has followed up this initial success by Apollo XII, Apollo XIV, XV, XVI and XVII.

Meanwhile, USSR set up the unmanned Luna 16 (Sept.12, 1970) and Luna 17 (Nov. 19,1970). Luna 16 picked up Moon soil samples and returned to the Earth on September 24, 1970. Luna 17 carried the Moon buggy Lunokhod 1, which roved the surface of the Moon. It was an eight–wheeled vehicle, which carried apparatus to study the lunar surface and radioed back the results to the Earth.

All these manned landings on the Moon and the investigations of the unmanned spacecraft like the Lunas, haven't solved the lunar puzzles. The question of the origin of the Moon and whether it is a daughter, sister or spouse of the Earth still remains unsettled.

However, the oldest rocks and soil samples brought back by the Apollo astronauts have shown that the Moon is about the same age as the Earth and was formed about 4600 million years ago.

Apollo Discoveries. Among the 6 Apollo missions that actually landed on the Moon, the first two were confined to the maria or low-lying portions and the others to highlands and areas of varied terrain like rills (narrow valleys). The Apollo missions have brought back nearly 800 pounds of lunar rocks which are being analysed and studied.

The most striking aspect of the Moon's appearance is the abundance of craters on its surface. They range in size from circular basins 1000 kilometres (about 620 miles) in diameter down to craters measuring less than a few metres or feet across. The majority of these craters have been produced by a continuous rain of meteorites over the eons.

The earth has also been subjected to meteoric bombardment, but the erosive action of winds and water, volcanic activities and earthquakes have obliterated evidences of meteoric impact on the Earth. Because these forces are absent on the Moon's surface, the lunar surface has preserved a record dating back to the time of the Moon's formation

Moon Rocks. The first landing sites (Apollo 11 and 12) were *mare* areas. The rocks from this area turned out to be basaltic lava, similar to volcanic rocks found on Earth.

Moon's Size and Motions

Mean distance from Earth	238,855 miles
Diameter	2159.9 miles
Diameter in terms of Earth's diameter	0.27250
Mass in terms of that of earth	1:81.30
Density in terms of water	3.34
Density in terms of Earth	0.6058
Ratio of gravity to gravity at the Earth's surface	0.166
Fraction of Moon's surface always invisible	0.410

A surprising finding was the occurrence o a high percentage of titanium. While terrestrial igneous rocks contained only about 1 per cent of titanium, the lunar rocks showed 10 times as much. A few minerals unknown or earth were found in the mare basalts. Among these is *Armalcolite*, a new name derived from the names of the astronauts-*Armstrong*, *Aldrin* and *Collins* and the name of the area *Tranquillititis*.

The lunar rocks were bone-dry, with no trace of water in any form. Neither did they contain any trace of any organic matter. So also, volatile elements (elements with low boiling points) like Sodium, Potassium, Chlorine, Germanium, Lead and Mercury were practically non-existent. The depletion o Sodium and Potassium is significant, because these two are among the most abundan elements found in terrestrial rocks.

The oldest rock recovered from the Moon was found at *Descartes* highland where Apollo 16 landed. It is 4.25 billion years old. On our present evidence this may be taken as the earliest date on which the surface of the Moon solidified.

Moonquakes as recorded by seismometers left by the Apollo Missions, run into hundreds. Some are the results of meteo impacts, others are landslides of the inne slopes of craters. But many are true luna quakes. The magnitudes of these quakes however, go up only to 2 on the Richter scale with 1.5 the smallest tremor that can be felt

One peculiarity of these moonquakes i that they occur most often when the Moo approaches closest to the Earth.

COMETS

The word Comet is derived from the Greek *aster kometes* meaning long–haired star. The long hair is the tail which looks like hair blowing in the wind. The head or the *coma* is the star.

Comets have been associated with disas-ers from the earliest times. It is not known ow comets– alone of all astral bodies– came o be treated as evil portents.

Orgin. Most astronomers have now come o believe that comets are primordial remnants from the formation of the solar system. They have their home in the cold outer fringe of the solar system away from the outermost planet. In this cold dark domain, where the Sun looks no brighter than a distant star, millions of cometary nuclei are congregated. Most of them are a mile or so in diameter though some may reach diameters of 50 miles or more.

Here, the comets are non-luminous and have no tails and move slowly in enormous orbits around the far distant Sun. But now and then, gravitational changes (e.g. the gravita-

Celestial Washout

It was billed as "once-in-a-lifetime" celestial spectacle. Thousands prepared for the heavenly visitor's 30th recorded swing past earth. But when the glowing ball of ice and solar dust, dubbed by earthlings Halley's Comet, whizzed past the planet on its latest 76-year cycle, few star-gazers in Asia found it as thrilling as the photographer who took this picture. For most, Halley's return was the celestial washout of the country.

Astronomers had warned it would be Halley's least spectacular passby in 2,000 years. But many were still expecting an unforgettable skyshow. School children and VIPs in Kandy, Sri Lanka, took to the highest point in town – the Topaz Hotel – to catch a glimpse, while high flyers in Hongkong shelled out $129 ahead to quaff brnady 9,000 metres above the clouds aboard a Boeing 737 for their view. In Singapore, the government played matchmaker, sponsoring a Halley's beach party for single people (high-IQs only need apply.) Bungalows in Pattaya were fully booked as Thais, binoculars in hand, lounged on the beach gazing skyward. Hundreds of Japanese tourists, many sporting Halley's T-Shirts and lugging telescopes, pilgrimaged to Alice Springs, Australia, for a view from the southern hemisphere. Alas, for most the mighty comet appeared as nothing more than a feeble smudge in the sky.

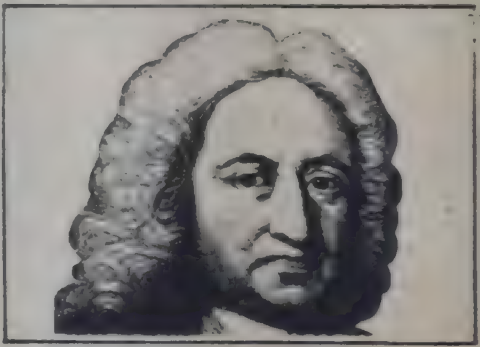
"It looked like a fuzzy ball and was almost invisible even through the binoculars," lamented Jeffrey Lai, 13, of Singapore. It was a different story for grandfather Lai in 1910, though. Said he: "I will never forget the magnificent, brilliant sight of the comet that year. It was awe-inspiring." Then Halley's passed within 22.5 million km of earth. Its 6-km-wide core, heated by the sun, formed a radiant gaseous ball millions of kilometres wide, and its luminous tail trailed half-way across the sky. This time round, Halley's closest approach, on April 11, only came within 63 million km of earth, and the already short stubby tail appeared even more foreshortened because the comet was approaching the planet.

Asia Week

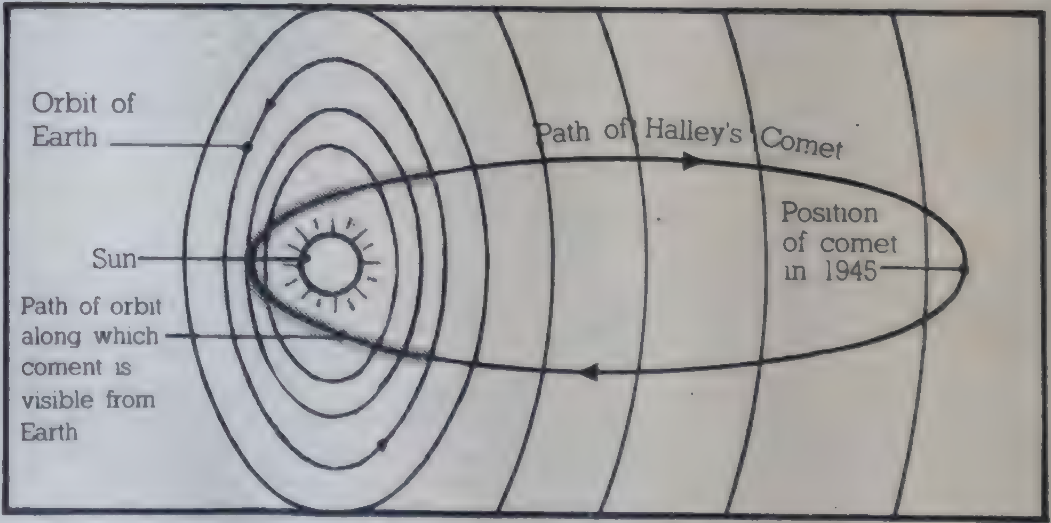
THE ORBIT OF HALLEY'S COMET

History's most famous comet is named after the man who worked out its orbit, the British astronomer Edmund Halley. In 1705 Halley calculated that the comets seen in 1531, 1607 and 1682 were in fact the same body, which orbited the Sun every 76 years. He stated that it would reappear in 1758-9, and this prediction proved correct. The comet appeared in 1986 too.

A photograph of Halley's Comet, taken on its appearance in 1986. Its tail then stretched for over 160 million Km. (100 million miles).



Edmund Halley who predicted that the comet he studied would return; but he did not live to see it.


Orbit of Earth
Path of Halley's Comet
Position of comet in 1945
Sun
Path of orbit along which coment is visible from Earth

Halley's Comet moves round the Sun in a 76 year orbit taking it beyond Neputne at one extreme and between Venus and Mercury at the other. Its probable first recorded appearance was in 466 BC and its latest in 1986.

on of the stars they pass by) shake out some omets from their slow orbits. Some of these ove out into the interstellar space and are st to the solar system. Others move into the olar system eventually to become the brilant long-tailed comets that we see from the arth.

Structurally, a comet consists of three arts, a nucleus, a head and a tail. The *ucleus* is a tiny object, only a few kilometres, n dimension. It is made up of ices of various ompounds like ammonia, water, dust and arger particles. It reflects sunlight and ppears as a bright spot in the centre of the ead. The *head* is comparatively big extendng up to a million kilometres. It is made up of as and microscopic dust particles. The *tail,* vhich is the distinguishing feature of the omet, is much larger than the head, extendng to a length of 20 to 30 million kilometres.

The comet does not possess its typical ead and tail when it is far away from the un. The head appears when it comes near upiter's orbit, and the tail develops when it rosses the orbit of Mars. The evaporation of he solid ice material around the nucleus, vhen the comet approaches the Sun, is esponsible for the appearance of the head. At the same time, solar wind is driving away he gaseous matter attached to the head. This xplains the streaming tail.

Orbits. A comet may have three kinds of rbits. If the comet approaching the Sun does ot have enough speed to overcome the un's gravity, it will settle down in an *elliptical* rbit like our Earth. A comet which has just nough speed to counter-balance the Sun's gravity will take on a *parabolic* orbit. If a comet is fast enough to overcome the Sun's attraction, it will describe a *hyperbolic* orbit and escape into interstellar space.

Comets that keep re-appearing in the solar system are said to be *periodic* comets. As they come near the Sun, they whip around it at enormous speeds and shoot away from the Sun, with their tails pointing ahead.

The periodic comets are divided into two categories, the short period group and the long period group. The short period group has periods of less than 200 years each. The long period groups have periods going up to thousands of years.

Halley's Comet, named after the English astronomer Edmund Halley, reappears every 76.3 years. The Great Comet of 1811 comes back once in 3000 years, the comet of 1844 in something more than 100,000 years while the comet of 1864 takes as much as 2,800,000 years to return.

It is estimated that the solar system may contain as many as 100,000 comets. But most of these stay at home, so to speak. Only very few comets stir out into interplanetary space and move around the Sun. Till 1974, according to an official catalogue, 611 comets were reported starting with Halley's Comet in 87 B.C. Out of these, 513 are long period comets which do not return for 200 years or more. The remaining 98 are short period–less than 200 years between visits. Sixty-five of these have been sighted more than once since they were noticed first. The most frequent visitor is Encke, first seen in 1786. Its period is so short (3.3 years) that it has returned 65 times since then.

THE EARTH

The earliest systematic theory of the Earth was the geocentric (geo=Earth) theory. According to this theory, the Earth was the unmoving centre of the universe, round which the Sun and the stars and all other heavenly bodies revolved.

One of the earliest proponents of this heory was Euodoxius of Cnidos, Circa(Haes) 360 B.C. Many Greek philosophers lisagreed with this view. Aristarchus of amos (310-230 B.C), for example, held that he fixed stars and the Sun remained unoved, that the Earth revolved round the Sun on the circumference of a circle, the Sun lying at the centre of the orbit". However, the ideas of Aristarchus and others like him never gained currency.

The final formulation of the theory was made by Claudius Ptolemy, a Greek astronomer of Alexandria. He brouhgt out an encyclopaedic work on astronomy in about 140 A.D. This work, later known by its contracted Arabic name *Almagest,* remained the Bible of astronomy for another 1400 years. Looking back, it seems incredible that such a fallacious theory should have ruled for so long a time. Actually, the theory enjoyed this longevity, because it had two attractive features. First it agreed with the apparent (not real) movements of the heavenly bodies. This satisfied the popular minds. Second, it flattered man's vanity to think that his abode– the Earth –was the centrepiece of the universe.

Heliocentric Theory. The heliocentric theory (helios-sun) was first advanced by Nicolaus Koppernigk (1473-1543), a Polish astronomer, better known by his Latinised name Copernicus. In 1543 Copernicus published a book ***De Revolutionibus Orbium Coelestium*** in which he set out the theory that the Sun was the centre of the universe and that the Earth and other planets revolved round it. Wrote Copernicus, "In the middle of all dwells the Sun. Who indeed, in this most beautiful temple, would place the torch in any other or better place, than one, whence it can illuminate the whole at the same time? Not ineptly, some call it the lamp of the universe, others its mind, others again its ruler..."

Like all other astronomers of the day, Copernicus believed that the solar system was equivalent to the universe. This was a mistake which was corrected only in recent times. He was also mistaken in assigning circular orbits to the planets. This mistake was corrected by the German astronomer Johann Kepler (1571-1630) in 1609. For the rest, the Copernican theory was sound and unassailable.

Nevertheless, the theory faced stormy weather. For the better part of a century disputations went on between the Copernicans and the Ptolemians, with the Copernicans remaining on the defensive. Even the Danish astronomer Tycho Brahe (1546-1601), the most celebrated astronomer of the times, rejected the heliocentric concept. It was left to the Italian astronomer, Galileo Galilei (1564-1642) to save the Copernican theory from extinction. Galileo fought a lifelong battle in defence of the Copernican system. Before he died he had the satisfaction of knowing that the tide had turned and that th Ptolemians were on retreat.

Sir Issac Newton (1642-1726) dealt the las blow at the geocentric theory. He formulate the law of gravitation and correlated it wit his laws of motion. His book ***Philosophia Naturallis Principia Mathematica*** (know shortly as ***Principia)*** marks a turning point i the history of astronomical thought.

Modern theories of the formation of th Earth and other planets are of course base on the Copernican theory. In 1749, th French naturalist Comte de Buffon argue that the planetary system originated as th result of a collision between the Sun and comet that came out from the depths space. In 1775 the German philosophe Immanuel Kant advanced what has sinc been known as the nebular hypothesis. H suggested that the Earth and the othe planets were condensed from a rotatin nebula of gas centred in the Sun (sola nebula). The French mathematician Marqu de Laplace supported the nebular hypotl esis in 1796. Around 1900 two America astronomers, T.C. Chamberlin and F.I Moulton, offered an altered version of Bu fon's theory. They argued that a star (not comet) passed by the Sun and drew out th material that later condensed into planet

Neither Buffon's thesis nor that of Cham berlin and Moulton could hold out for lon But Kant's hypothesis received further su port. . In 1943 the German scientist vo Weizacher came out with a restatement the nebular hypothesis. He was supported b the American astronomer Kupier. The argued that the entire solar system origin ated from a massive wheeling cloud of ga and dust some 6 billion years ago. Th central mass of this rotating disc of ga formed the Sun. Because of its intens pressure and temperature, the Sun produce light, heat and other radiation through nu lear reaction. The clouds on the periphery the central mass (Sun) condensed to form th planets and other celestial bodies of the sola system– all of which were held together b the gravitational pull of the Sun.

Age of the Earth. The age of th earth was a matter of speculation till ve recent times. Imagination played a ve great part in this process. Naturally, th conclusions varied greatly. Thus an o ussian calendar put down the age of the arth at a mere 2000 years, while a Hindu alculation (quoted by Prof. Arthur Holmes) ut it down at 2000 million years. In 1658, an ish bishop, James Ussher, set out to fix the xact age. He calculated on the basis of the ible that the Earth was created on Sunday, e 23rd October, at 9 a.m in the year 4004 .C.

It was only about 200 years ago, that cientific enquiries were started by geologists. According to their deductions, based on he study of rocks, the age of the Earth is stimated to be around 4600 million (4.6 illion) years.

tructure. Our knowledge of the internal tructure of the Earth is derived from studies f earthquakes. The shock waves sent out by n earthquake indicate the physical nature of he regions through which they pass. These tudies show that the centre of the Earth is a olid core-the *Inner Core*. The density of this ore is about 13 gm to the cubic centimetre. he Inner Core is about 1300 km thick and is urrounded by an *Outer Core* of around 2080 m. The Outer Core appears to be molten.

The Outer Core is surrounded by the Mantle which has a thickness of around 2900 m. The Mantle is topped by the crust of the arth, which varies widely in thickness–from 2 to 60 km. At the centre or the Inner Core, hat is at a depth of some 6370 km temperaure goes up to some 4000°C and pressures each nearly 4 million atmospheres. (See *ir Pressure- Atmosphere-* infra).

The Mantle. The mantle is important in nany ways. It accounts for nearly half the adius of the Earth (2900 km), 83 per cent of s volume and 67 per cent of its mass. The lynamic processes which determine the novements of the crust plates are powered y the mantle.

Starting at an average depth of from 45 to 6 km below the top surface of the Earth, the nantle continues to a depth of 2900 km vhere it joins the outer core. The mantle is a hell of red hot rock and separates the arth's metallic and partly melted core (both he inner and the outer cores) from the ooler rocks of the Earth's crust. It is comosed of silicate minerals rich in magnesium nd iron. The density of the mantle increases vith depth from about 3.5 grams per cubic centimetre to around 5.5 grams, near the outer core.†

Earth Data

Superfical area	196,950,000	sq. miles
Land surface	57,510,000	,,
Water surface	139,440,000	,,
Equatorial Circumference	24,902	miles
Meridional circumference	24,860	,,
Equatorial diameter	7,926,677	,,
Equatorial radius	3,963.34	,,
Mean distance from the Sun	92,857,000★	,,
Time of Rotation on its own axis	23 hrs. 56 min., 4.09 sec	
Period of Revolution round the Sun	365 days 5 hrs. 48 min., 45.51 sec.	
Inclination of the axis to the plane of the ecliptic	23°27'	

Speed of Rockets (that is, velocity required to counter earth's gravity and to rise up into the atmosphere)- A minimum of 8 km (5 miles) per second.

Escape Velocity (that is, speed necessary to break away from the earth into outer space)- 11 km (7 miles) per second

★ (This is now known as Astronomical Unit. A.U.)

The upper portion of the mantle, about 250 km thick, is called the *Asthenosphere*. Here the rocks are partially melted, with thin films of liquid distributed between the mineral grains. The red hot nature of the lower mantle and the partially melted nature of the upper mantle (asthenosphere) combine to make the whole mantle plastic or yielding. It is on this plastic base that the top crust of the Earth (consisting of oceans and continents) that is to say, the lithosphere, rests. The lithosphere is distinguished from the asthenosphere by the fact that it is cooler and therfore more rigid.

The crust of the earth which tops the lithosphere virtually floats on the asthenosphere. Like other floating bodies the crust seeks an equilibrium riding deeper where it is heavier and rising higher where it is lighter. The mountains on the crust have deep roots of light material to support them and when the load on any part of the crust changes, the surface responds by rising or sinking to restore the equilibrium.

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†Source. *Scientific American*

The Outer Surface. The outer surface of the earth is divided into four spheres. *1. Lithosphere* means the entire top crust of the earth and includes not only the land surface but also the ocean floor. *2. Hydrosphere* is the water surface which includes the oceans, lakes and rivers. It rests on the lithosphere.
3. Atmosphere is the blanket of air that envelops the earth. It covers both the land surface and the water surface. *4. Biosphere* is the sphere of life which spreads over all the three other spheres, lithosphere, hydrosphere and atmosphere.

LITHOSPHERE

The lithosphere is the top crust of the earth on which our continents and ocean basins rest. It is thickest in the continental regions where it has an average thickness of 40 km and thinnest in the oceans where it may have a maximum thickness of 10 to 12 km. It constitutes about 1 per cent of the Earth's volume and 0.4 per cent of its mass.

Though the lithosphere technically includes both the land mass and the ocean floor it is often used to indicate only the land surface, especially where it is sought to be distinguished from hydrosphere or the water surface. Regarded thus, the lithosphere forms only 3/10 of the total surface of the Earth. The rest 7/10 is taken up by the oceans.

Land Surface. As we see it today, the topmost portion of the land surface is sand and soil* except where rocky outcrops show. All the sand and much of the soil that we see have been derived from ancient rocks. The rocks themselves were originally formed from the molten magma, which erupted from the interior of the earth. Powerful earth movements have heaved up some of the rocks to the top surface, where they have been exposed to climatic influences. The process by which rocks are broken down into sand is known as 'weathering'. Many factors operate to weather down the rocks, of which the most important is 'weather' itself.

When rocks heated hot by the Sun are suddenly cooled by rain they crack. When the process goes on for thousands of years big rock formations crumble down as sand. Similarly frost can break down rocks. Water caught in the crevices of rocks turns to ice in winter conditions and expands. This pressure often cleaves rocks. These and other conditions have combined to produce the land formations that we see today.

Rocky Substructure. The contour of the landscape are largely conditioned b the rocky substructure of the lithosphere Geologically speaking, all materials that make up the crust of the Earth are rocks whether they are big granite boulders, combustible coal, soft clay or loose fragments o gravel or sand. Rocks which form the lithographic substructure may be broadly grouped into three classes- *1. Igneous rocks, 2 Sedimentary rocks*, and *Metamorphic rocks*

Igneous rocks are formed out of the molten magma from the interior of the earth. Ninety five per cent of the earth's crust is made up o these rocks. Three types of igneous rocks may be noticed here, ***Granite***, ***Basalt*** and ***Volcanic***. Granite is the major rock in continental formations. Basalt largely occurs i ocean beds. Volcanic rocks, as the name implies, are formed from the molten lav ejected by volcanoes.

Sedimentary rocks are so called because they are formed from the sediments deposited in the ocean beds. They comprise onl 5 per cent of the Earth's crust but cover about 75 per cent of the land surface. Sedimentary rocks are not important structurally but economically. It is from these rocks that we get our coal, oil and some valuable minerals Sedimentary rocks are mainly made up o e weathered remains of igneous rocks but ey also contain much organic matter rmed from the remains of microscopic arine organisms and dead wood or other egetable matter. Sedimentary rocks are rmed in horizondal layers called strata and ke millions of years to harden into rocks. nce formed, these rocks are often rolled up r deformed and shifted about by earth ovements and are sometimes located in the ost unlikely places, the top of the Hima- yas, for instance.

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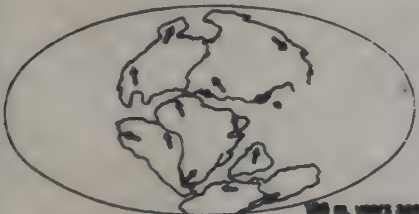
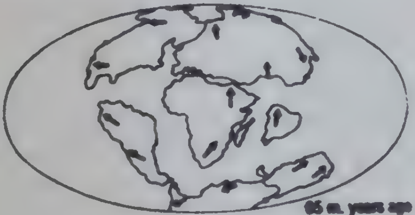
* Soil is distinguished from sand because soil contains humus or decomposed organic matter (dead leaves, roots etc.) which provides nutrients for plants. Sand as such does not contain humus.

Metamorphic rocks are rocks transformed by the action of intense heat or great pressure or chemical activity on rock formations *in situ*. Both igneous and sedimentary rocks are liable to be metamorphosed. Metamorphism is often associated with volcanic activity or the extrusion of molten or hot gases into pre-existing rock formations. Marble, for example, is formed by the action of intense heat on limestone. Slate is formed from the compression of shale and mudstones.

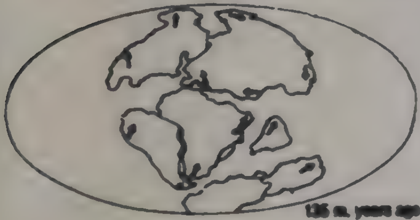
Whither Continents?



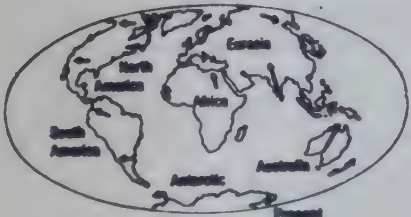
180 m. years ago



65 m. years ago



135 m. years ago



Present

Once upon a time, say 200 million years ago, our continents were lumped together into one huge land mass called Pangaea. Then they separated and started drifting, until they have become what they are today. But they have not stopped moving even now. They continue in their age-old motions. Will they come together back again as Pangaea? No one knows. One thing, however, is certain. The configuration of Continents will be completely different in another 50 million years.

A generally accepted forecast of the shapes and positions of continets 50 million years hence is the following. Australia will push on northward to come alongside of Malaysia and collide with Asia. Such a collision will spawn Earth movements more gigantic than the collision of India with Asia some fifty million years ago. Africa will continue to edge towards Europe. This will convert the Mediterranean into a series of inland lakes. The sea will invade the African Rift Valley and segregate East Africa from the mainland of Africa. The Bay of Biscay in Europe will close up. The Atlantic and the Indian Oceans will expand and the mighty Pacific will shrink. Lower California and such parts of California which lie to the west of San Andreas Fault will move towards Alaska. Los Angeles, the city of dreams, will go down the Aleutian trench and disappear into the mantle of the Earth.

Source: Scala

Continents

Name	Area sq. miles	Percentage of Earth's area	Population Estimate	Highest Point in feet		Lowest Point in feet	
Asia	16088000	29.5	2316312000	Everest	29028	Dead Sea	1
Africa	11506000	20.0	401000000	Kilimanjaro	19340	Lake Assai	5
N. America	9390000	16.3	342700000	McKinley	20320	Death Valley	2
S. America	6795000	11.8	219000000	Aconcagua	22834	Valdes Penin	
Europe	3745000	6.5	660313000	Elbrus	18510	Caspian Sea	
Australia†	2968000	5.2	13800000	Kosciusko	7310	Lake Eyre	
Antarctica	5500000	9.6	–	Vinson Massif	16860		

† Australia with New Zealand, Tasmania, New Guinea and the Pacific islands. (Micronesian, Melanesian and Polyne Islands) is called *Australasia* by some geographers while some others call it Oceania

The Lithosphere is divided into twelve climatic regions.

Continental Drift. We know that the face of the Earth, that is, its visible surface has undergone radical changes in the past. Geologists explained these changes as the consequences of the cooling and contraction of the Earth, through thousands of years. This explanation seemed quite unsatisfactory to a German scientist, Alfred Wegener (1880-1930). In 1915, Wegener published a book *The Origin of Continents and Oceans* in which he advanced a new theory, the theory of *Continental Drift*.

This theory claimed that the changes in the appearance of the Earth were, in the main, due to the shifting of continents. Wegener grounded his theory primarily on two premises. First, that the geological formation and fossil remains of the present far away continents showed striking similarities. Seco that some of the continents showed as nishingly complementary coastlines. T east cast of South America, for examp matches the west coast of Africa, so fin that they would fit together exactly, if th were brought together.

Wegener was no geologist. He was qualified astronomer who practis meteorology. Though one or two geologis Prof. Arthur Holmes, for instance– suppor him, the majority of the geologists con mned his theory as absurd. Wegener die discredited man. But researches oceanography in the sixties clearly show that the theory of continental drift was s stantially right. It is now generally accep that the continents, far from being immuta fixed in their positions, have been constan on the move throughout gelogical history a are still shifting.

EARTHQUAKES

Earthquakes are of two kinds, *Volcanic and Tectonic.* Volcanic earthquakes are caused by the eruption of volcanoes. On land, they are localised around the volcanoes and therefore do not cause extensive damage. But, in the sea, these earthquakes can give rise to tidal waves, which travel across the oceans and destroy shorelines far away.

Tectonic earthquakes are caused by shifts in the rock structure of the Earth. They affect vast areas and cause extensive damage. When large basins of rock structures are subjected to stress, they bend as far as their elasticity would permit. Beyond this point, they break with a rebound. This cau earthquakes.

Earthquakes occur in regions of mark instability of the Earth's crust. It is now kno that plate boundaries form such unsta regions. Earthquakes may arise for a vari of reasons. Some tensional earthquakes clearly arise from 'faulting', that is to say, from Transform faults which are found all along plate boundaries. Some others arise from the arching of the lithospheric crust as converging plates press hard against each other. Others may result from the tearing of the lithosphere under high pressure. In short, earthquakes abound wherever the edges of two rigid lithospheric plates meet and jostle each other. Many of the Earth's greatest earthquakes like the Kamchatka earthquake of 1952, the Chile earthquake of 1960 or the Alaska earthquake of 1964 occurred around such zones of high friction. Smaller zones of lesser friction produce minor earthquakes.

Seismic Belts. Such regions of tne Earth as are prone to earthquakes are called Seismic Belts. The circum-Pacific seismic belt, otherwise called the *Ring of Fire*, is the most important seismic belt and includes the western coast of the Americas, the eastern coast of Asia, the islands of the South-East Pacific and New Zealand. The next important belt called the *Alpine belt* runs from the South Pacific Islands, through Java, Sumatra and other Indonesian islands, crosses the Central Asian mountains and passes on through Caucasus to Greece, Italy and Spain. A third belt – the *Atlantic belt* – runs from north to south through the middle of the Atlantic Ocean.

Earthquakes

Country	Years			
China	1057,	1290,	1556,	1920,
	1932,	1964,	1975.	
Japan	1293,	1528,	1703,	1923
	1946,	1948.		
India	1737	(Calcutta),	1819	(Cutch),
	1819	(Assam),	1897	(Assam),
	1905	(Kangra),	1916	(Nepal),
	1934	(Bihar),	1935	(Assam),
	1935	(Quetta),	1937	(Calcutta),
	1950	(Assam),	1967	(Koyna),
	1975	(Himachal Pradesh),		
Iran	1775,	1957,	1962,	1963,
	1968,	1978,	1981.	
Turkey	1268,	1822,	1939,	1946
	1953,	1971.		
Chile	1906,	1939,	1960,	1965.
Peru	1868,	1970.		
Ecuador	1797,	1868,	1949.	
USA	1811-12,	1906,	1964.	
Italy	1693,	1783,	1908,	1915.
Portugal	1531,	1775.		
Mexico	1985			
El Salvador	1986			

(For details of El Salvador quake: See Disasters in Part II)

Seismic Waves

R.D. Oldham who was the Director General of the Geological Survey of India in 1897 was the first geologist to distinguish different seismic waves and interpret them. Oldham distinguished three main types of waves – (i) P waves or primary waves. (ii) S waves or secondary waves and (iii) Surface waves.

P waves are compression or expansion waves like those of sound, S waves vibrate at right angles to the direction of travel as 'light waves' do and Surface waves appear in the upper 20 miles or so near the Earth's surface. P waves travel at their maximum speed ($8\frac{1}{2}$ miles per second) at a depth of 1800 miles and at about 3 miles per second in rocks near the surface of the Earth. S waves travel at about two-thirds of the speed of P waves. But there is one distinction. S waves travel through the solid parts of the Earth only while P waves travel through the solid as well as other parts of the Earth. The speed of both varies with depths in the Earth. At the core of the Earth S waves disappear but P waves go on curving upwards to the surface.

In India, the main earthquake belt runs along the Himalayan Ranges and southwest to the swamps of the Ranns of Kutch. All the major earthquakes of India except the one at Koyna (Maharashtra) have occurred in this belt.

Seismic Waves. When an earthquake strikes, tremors spread outwards in two different types of seismic waves. Primary or P-waves cause any rock in their path to compress and then expand in the same direction as the waves are travelling. Secondary or S-waves move the rocks in a direction perpendicular to their path.

According to UNESCO, some 60,000 earthquakes occur annually on Earth. The great

Plate Tectonics

*The discoveries of the sixties, supporting the Continental Drift, have given birth to a new concept of geology– **Plate tectonics**. Tectonics simply means the study of rock structures involved in earth movements. Plate tectonics deals with such structures as are in the form of plates. The concept has revolutionised the study of geology in the same way as the Copernican theory has revolutionised the science of astronomy. The Copernican theory entailed a radical change in our ideas of the Earth and the solar system. Plate tectonics has worked a similar revolution in our conception of the Earth itself. It has proved that the Earth is not static but dynamic, so dynamic that it can rightly be described as 'alive and kicking.'*

*The Continental Drift assumed that the continents ploughed through the oceans like massive ships. Plate Tectonics tells us that it is not only the continents that are in motion, but the oceans as well. This is so, because the top crust of the Earth is not (as we have thought) an unbroken shell of granite and basalt, but a mosaic of several rigid segments, called plates. These plates include not only the earth's solid upper crust, but also parts of the denser mantle below. They have an average thickness of 100 km (60 miles.) They float on the plastic upper mantle of the Earth, called **Asthenosphere**, and carry the continents and oceans on their backs like mammoth rafts.*

*All these plates are in constant motion relative to one another. One source of confusion in distinguishing between continental drift and plate tectonics is to assume that continents and plates are synonymous. They are not. Continents form only a part of the plates, the surrounding oceans form the rest of the plates. The continents alone do not drift or move. It is the plates containing both continents and oceans that move. So we now talk of **plate movemnets** instead of **continental drift**.*

majority of these earthquakes are mild and cause only tremors. Others may cause destruction in varying degrees. The magnitude of an earthquake is measured on the ***Richter scale***, devised by C. F. Richter in 1936. Earthquakes up to 6 on the Richter scale are mild affairs and do not cause serious damages. Between 6 and 8 the earthquakes can be disastrous, depending upon what part of the world is affected by it. If it is a thickly populated area, heavy loss in life and property will follow. Beyond 8, the earthquakes are cataclysmic and bring in total destruction wherever they strike. It is estimated that over 1.5 million people have died in earthquakes, since 1000 A.D.

VOLCANOES

We now know that volcanoes and earth-quakes are associated with plate boundaries, especially subduction zones. Subduction zones are centres of great activity and high pressures. Some of the historic volcanic eruptions have been found to be directly related to activities on plate boundaries.

Krakatoa, an Indonesian island, lay on a plate boundary in Sunda Strait, along the Java Trench. In 1883, this island sank and disappeared owing to volcanic eruption. In 1929 a new island – Ana Krakatoa – rose in the same place.

In 1963, a volcanic eruption rising from the Mid-Atlantic ridge, a plate boundary, created an island off the coast of Iceland – ***Surtsey***. The force of the eruption sent up the lava above the water surface, forming an island, where there was none before.

Volcanoes thus play a vital role in forming and transforming the topography of the earth.

It is not known exactly what forces create volcanoes or provide them the fuel power. The prevailing view is that volcanoes are fired by thermal plumes or hot spots which send up molten lava under high pressure. Such thermal plumes or hot spots are found distributed over the globe. They break out periodically. A thermal plume in the Pacific has been turning out volcanoes for some 70 million years. This plume has built a 1500-mile chain of volcanoes, over the Hawaiian archipelago, extending from Hawaii at one end to Midway on the other. Another chain of submerged volcanoes, over 2000 miles long called the ***Emperor Sea Mounts***, has also been attributed to this plume. Both these chains have been built by the movement of the Pacific plate. As the Pacific plate moved over the plume, at about 5 inches per year, the upwelling from the plume created a steady succession of volcanoes. As the Pacific plate moved on, these volcanoes migrated with it.

Active Volcanoes. There are about 535 active volcanoes out of which nearly 80 are in the oceans. Volcanoes are said to be ***active*** when eruptions occur frequently, ***dormant*** when no eruption has occurred over a long period of years and ***extinct*** when no eruptions have occurred during historic times.

Aconcagua (22,834 feet), the highest peak in the Andes, South America, is an extinct volcano, ***Kilimanjaro*** (19,565 ft.) in Tanzania, Africa and ***Llullaillaco*** (22,057 ft.) in Chile, South America are thought to be dormant. But volcanoes keep surprises up their sleeve, so to say. ***Vesuvius***, for instance, was thought to be extinct but it sprang into unexpected activity in 1944.

Active Volcanoes

Height (feet)	Name & Location	Last Notified Eruption
19,347	Cotopaxi-Andes, Ecuador	Steams
17,887	Popocatepetl-Altiplano de Mexico	Steams
15,584	Klyvuchevskaya-Sredinny Khrebet. USSR	1964
14,006	Wrangell-Wrangell Mts., Alaska	Steams
13,812	Tajumulco-Guatemala	Rumbles
12,582	Fuego-Sierra Madre, Guatemala	1962
12,450	Erebus-Ross Is. Antarctica	Steams
12,224	Rindjani-Lombok, Indonesia	1964
12,060	Semeru-Java, Indonesia	1963
11,057	Mt. Etna-Sicily, Italy	1965
10,308	Agung-Bali, Indonesia	1964
8364	Mt. St. Helens, USA	1980
6760	The Peak-Tristan da Cunha, S. Atlantic	1961
4090	Kilauea-Hawaii	1961
3031	Stromboli-Island, Mediterranean	1956
568	Surtsey†-off S.E. Iceland, Iceland	1963
510	Ana† (New) Krakatoa-Island, Indonesia	1929

† Both are volcanic islands formed in the present century – Surtsey in 1963 and Ana Krakatoa in 1929

MOUNTAINS & DESERTS

Mountains are conventionally divided into four types, according to their mode of origin: Fold mountains, Block mountains, Volcanic mountains and Residual mountains.

Fold Mountains arise because the rocks in them have been buckled and crumpled by pressure. Just as a tablecloth, when pushed along a table, wrinkles up into folds, the rocks of the Earth's crust react, to lateral pressure to form folds. If the pressure is very great, the folds are squeezed tightly into pleats. Further pressure will send the pleats rolling over one another. As the pleats roll up, high elevations are formed. Only massive pressures like those resulting from colliding plates can fold and mould rocks into moun tains. In fact, it turns out that all our big mountain systems have been formed by colliding plates. The *Himalayas* rose over such a colliding zone. So did the *Andes* (S. America), the *Rockies* (N.America) and the *Alps* (Europe). The Himalayas, the Andes, the Rockies and the Alps are fairly young mountains and are classed as *new fold mountains*. They have come into being, after the continental drift started with the breakup of the super continent, Pangaea (See *Continental Drift*)

What are called *old fold mountains* must have been formed in the Pre-drift era long before the continental masses came together to form Pangaea. Among the old fold mountains are the *Pennines* of Europe the *Appalachians* of America and the *Aravallis* of India. These mountains had been weathered down to stumps long ago (see *pre-drift supra*)

Principal Peaks

Name	Country	Height(ft)
Mt. Everest	Nepal-Tibet	29,028
Mt.Godwin	India	28,250
Kanchenjunga	Nepal-India	28,280
Dhaulagiri	Nepal	26,810
Nanga Parbat	India	26,660
Annapurna	Nepal	26,504
Nanda Devi	India	25,645
Mt. Kamet	India	25,447
Gurla Mandhata	Tibet	25,355
Tirich Mir	Pakistan	25,263
Minya Konka	China	24,900
Mt. Communism	USSR	24,590
Pobeda Peak	USSR	24,406
Muztagh Ata	China	24,388
Chomo Lhari	India-Tibet	23,297
Muztagh	China	23,890
Aconcagua	Argentina	22,834
Ojos del Salado	Argentina-Chile	22,532
Cerro Mercedario	Argentina	22,221
Huascaran	Peru	22,205
Liullaillaco Volcano	Chile	22,057
Tupungato	Chile-Argentina	21,489
Sajama Volcano	Boliva	21,391
Illampu	Bolivia	21,276
Vilcanota	Peru	20,664
Chimborazo	Eucador	20,561
Mt.McKinley	Alaska	20,320

Great Deserts

Name	Country	Area in sq. miles
Sahara	N.Africa	3,500,000
Libyan	N.Africa	650,000
Australian	Australia	600,000
Great Victoria	Australia	125,000
Syrian	Arabia	125,000
Arabian	Arabia	50,000
Gobi	Mongolia	400,000
Rub'al Khali	Arabia	250,000
Kalahari	Botswana	200,000
Great Sandy	Australia	160,000
Takla Makan	China	125,000
Arunta	Australia	120,000
Kara Kum	S.W.Turkistan	105,000
Nubian	N.Africa	100,000
Thar	N.W.India	100,000
Kizil Kum	Central Turkistan	90,000

Block Mountains come into being as a result of vertical earth movements along cracks or faults. Such movements are also caused by the pressure generated by plates. When such vertical earth movements leave a block of high elevation standing between two areas of low elevation, the high land area forms a block mountain. Block mountains are usually steep-sided. The *Vosges* in France and the *Block Forest* mountains in W. Germany are mountains of this type.

Volcanic Mountains form as a result of volcanic eruptions. When a volcano erupts, the materials that are ejected fall around a hole or crater and build up a mountain that is roughly conical in shape and has a crater at the top. *Fujiyama* in Japan, *Vesuvius* in Italy and the *Chimborazo* and *Cotopaxi* in the Andes (S. America) are examples of such mountains.

Residual Mountains: Some mountains are so deeply dissected and reduced by weathering and river action that they stand out as skeletons. The *Catskill* mountains of New York are typical of this class.

ISLANDS

Islands comprise a large mass of land, the biggest 16 of them accounting for as much as 22 million sq. miles – greater than the area of the continent of Europe. The smaller islands count by the thousands. Islands are broadly divided into three types, continental, oceanic and coral.

Continental Islands are those islands that rise from the continental shelf, like the British Isles or Newfoundland. These islands have the same geoogical structure, as the continents to which they are related. *Oceanic Islands* are those that rise from the bosom of the oceans. Their geological structure will have no relation to that of the nearest shores. They are very often the tops of submarine mountains or submarine volcanoes. *Ascension* and *Tristan da Cunha*, for example, rise from the Central Atlantic ridge (mountain) while *St. Helena* and *Teneriffe* are islands formed by submarine volcanoes.

Coral Islands are the work of minute sea organisms called coral polyps. They congregate in large colonies. When the organisms die, their skeletons, which are made of a substance resembling limestone, form big clusters, some of which rise above the water.

Coral organisms are of many types and coral formations assume many strange shapes. Some colonies spread out like fans, others grow into umbrella-like discs or plates, while many develop spiky horns. Their colours are also as varied as their shapes. Most corals are of different pastel hues, such as lavender, soft blue, green or violet. Coral retains its fascinating colours when the colony is alive. When the colony dies, the colours fade gradually, and totally disappear where the coral is exposed to the heat of the Sun.

The gem varieties of coral which have been found in red, pink, gold or black colours do not bleach or change colour when exposed to the sun (see *Gemstones*, Part II).

Reef Corals. One type of coral excels in building reefs. Reef-building corals thrive in warm tropical seas. They usually start building reefs, along the edges of islands. Such reefs are called *fringing reefs*. Many tropical islands have such fringes. These protect the islands from the ravages of the sea. Sometimes an island, with a coral fringe begins to sink. Its shoreline goes down first, while coral building continues upwards. The sea invades the sinking shoreline and separates the coral reef from the rest of the island. Such a reef is called a *barrier reef*. The *Great Barrier Reef*, which extends for more than

World's Largest Islands

Name	Area sq.miles	Location
Greenland	840000	Arctic Ocean
New Guinea	317000	West Pacific
Borneo	287400	Inidan Ocean
Malagasy Rep.	227800	Indian Ocean
Baffin Island	183810	Arctic Ocean
Sumatra	182860	Indian Ocean
Honshu	88019	N.W. Pacific
Great Britain	84186	North Atlantic
Eliesmere Island	82119	Arctic Ocean
Victoria Isand	81930	Arctic Ocean
Celebes	72987	Indian Ocean
South Island, N.Z.	58093	S.W. Pacific
Java	48763	Indian Ocean
Luzon	46636	West Pacific
North Island, N.Z.	44281	S.W. Pacific
Newfoundland	42734	North Atlantic
Cuba	41634	Caribbean Sea
Iceland	39698	North Atlantic
Mindanao	39191	West Pacific
Ireland (N.Ireland Rep. of Ireland)	31839	North Atlantic
Hokkaido	30007	N.W. Pacific
Hispaniola (Dom. Rep. & Haiti)	29530	Caribbean Sea
Sakhalin	28597	N.W.Pacific
Tasmania	26215	S.W.Pacifc
Sri Lanka	25332	Indian Ocean

1200 miles parallel with the coast of Queensland, Australia, appears to have come into existence in this manner. This is the biggest coral reef known and consists almost entirely of the limestone skeletons of countless coral colonies that had existed through thousands of years. (see *Superlatives Part II)*

Atolls. Low circular coral islands, each with a central lagoon of shallow water, are called atolls. Atolls probably represent the late stage in the evolution of a coral island. When the island around which coral builds sinks, the coral ring remains above water, while the island disappears under the water. In course of time the coral limestone reef is weathered down to soil and seeds carried by birds or winds begin to sprout and produce vegetation. Then the coral reef turns into an inhabitable area-*a coral island* in fact.

Atolls consist of two parts, a central lagoon (watery area) and a surrounding reefland. Sometimes the watery surface is much bigger than the land surface. This is the case with *Kwajelin* in Marshall Islands, Central Pacific, where the water area covers 1100 sq. miles while the land area is a narrow ring, with a total length of 176 miles. On the other hand, *Christmas Island* in Line Islands, Central Pacific, is an atoll with the largest land area known–184 sq. miles. Its lagoon or water surface is relatively insignificant.

HYDROSPHERE

It is estimated that the hydrosphere contains about 1,460,000,000 cubic km of water. Of this 97.3% is in the oceans and inland seas. The rest 2.7% is found as glaciers and ice caps, fresh water lakes, rivers and underground water.

The total stock of ocean water and fresh water has been fairly constant throughout geological history. But the ratio between ocean water and fresh water has always changed according to climatic conditions. When the climate is very cold much of the sea water is absorbed by glaciers and ice caps and fresh water increases at the expense of sea water. When the climate grows hot glaciers and ice caps melt and sea water gains at the cost of fresh water. "Sea level observations during the last 60 to 80 years indicate that the sea level is rising slowly."† This means that the climate is becoming hotter.

Oceanic Water. The oceans cover 70.8% of the Earth's total surface area and hold 1445 million cubic km of water. The water despite its abundance is not directly useful to man, because it is not potable.

The ocean water contains about 3.5 per cent of dissolved salts – chlorine, sodium, magnesium, sulphur, calcium, potassium, bromine, strontium and boron. Minute quantities of carbon, silicon, aluminium, flourine and iodine are also found. The oceanic waters are always in motion, owing to a variety of natural forces.

Coriolis Effect. Solar heat sets ocean water moving. The Sun warms up the water in the equatorial regions causing it to expand and rise by a few inches. This extra rise in the equator causes the water to flow down. to the north and south poles. As the warm water of the Equator flows north and south, the

Fresh Water Resources

Source	Area (km²) ×10³	Volume (km³) ×10³	Percentage of total
Total fresh water	147900	38982	2.67
Polar ice glaciers	15100	29784	2.04
Ground water			
800m-4000 m deep	130900	4964	0.34
Less than 800 m deep	130900	3842	0.27
Lakes	830	131.4	0.009
Soil moisture	130900	73	0.005
Atmospheric vapour	510100	14.6	0.001
Rivers	–	1.5	0.0001

Source: Science reporter.

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† Science Reporter

heavier cold water (heavier, because of its extreme condensation) in the polar areas sinks below the warm water and spreads slowly along the bottom to the equatorial regions.

This interflow is complicated by the force of the rotation of the Earth. Because the Earth spins eastwards, the sea water tends to roll up to the west, turning slightly to the right in the northern hemisphere, and to the left in the southern hemisphere. This is known as the *Coriolis Effect*, after the French mathematician, who discovered it nearly a century ago.

The Oceans. The oceans, unlike the continents, merge so naturally into one another that it is hard to demarcate them. Nevertheless, geographers have divided the oceanic area into 4 oceans, namely the ***Pacific***, the ***Atlantic***, the ***Indian*** and the ***Arctic***. These oceans, by definition, include the seas, bays, gulfs and other ocean inlets attached to them.

The *Pacific* ocean is the largest and the oldest of the oceans. It occupies 35.25 per cent of the world area. It is 10492 miles at its broadest and 37,782 feet at its deepest (Mindanao Deep). It has the greatest conglomeration of islands, which fall into three broad groups. ***Micronesia, Melanesia*** and ***Polynesia***.

The ***Atlantic*** ocean, the second largest ocean, covers 20.9 per cent of the world area. Its greatest depth is 27,498 feet (Milwaukee Deep).

The ***Indian*** ocean, the third largest, stretches from Cape Comorin in India to the Antarctic at the South Pole. It takes up 14.65 per cent of the Earth's total surface area. Its greatest depth is 25,344 feet (Planet Deep).

The ***Arctic*** is strictly not an ocean. It is not navigable. It winds round the North Pole and is completely frozen in winter and covered with drifting ice for the rest of the year. However, its separate existence and its area of over 5 million sq. miles entitle it to be called an ocean.

Seven Seas. We have got only four oceans but seven seas. The proverbial seven seas are made up by dividing the first three oceans into north and south along the Equator and adding Arctic to them, thus: North Pacific, South Pacific, North Atlantic, South Atlantic, North Indian, South Indian and Arctic.

The following table shows the areas of the oceans, with their seas and other inlets detached.

Oceans

Name	Area (sq. miles)
Pacific	63,800,000
Atlantic	31,800,000
Indian	28,400,000
Arctic	5,400,000

Principal Seas

South China Sea ..	3,144,000
Caribbean Sea ..	1,063,000
Mediterranean Sea ..	966,750
Bering Sea ..	875,750
Gulf of Mexico ..	595,750
Sea of Okhotsk ..	589,800
East China Sea ..	482,300
Hudson Bay ..	475,800
Sea of Japan ..	389,000
Andaman Sea ..	308,000
North Sea ..	222,125
Black Sea ..	178,375
Red Sea ..	169,000
Baltic Sea ..	163,000
Persian Gulf ..	92,200
Gulf of St. Lawrence ..	91,800

Ocean Floor. It was once thought that the sea bottom was flat and featureless. Recent researches in oceanography have revealed amazing topographical features in the ocean bed. The sea basins, some two and a half miles down are furrowed with terraces; ribbed with mountain ranges and pitted with deep trenches.

The ocean floor may be subdivided into 3 broad groups: i. the Continental Terrace, ii. Abyssal Plains and iii. Ocean Trenches. The ocean floor slopes down from the Continental Shelf to the deep sea plains. ***The Continental Shelf*** is the sea floor closest to the shore. The shelf slopes down to a depth of around 200 m. The average width of the continental shelf may be between 65 and 75 km but in some places the width may be as much as 800 miles. The total area of the continental shelf is big, as big as that of Europe and S. America put together, that is to say, around 10 million sq. miles.

Beyond the shelf is the *Continental Slope* which generally reaches a depth of 1500 m but may go down to 2500 m in some places. It occupies a comparatively narrow strip of the sea-bed with an average slope of 4.3 degrees. The next portion which is really a part of the Slope is called the *Continental Rise.* This has a fairly wide extent of 1500 to 3000 m sometimes going up to 4000 m. Both the Slope and the Rise are covered up with sedimentary matter which has floated down from the continent and its shelf. But the Slope is only partly covered with sediments while the Rise is almost wholly covered with it. These three different parts – Continental Shelf, Slope and Rise – are often clubbed together as the *Continental Terrace.*

Beyond the Continental Terrace lie the deep sea plains called *Abyssal Plain* which may average a depth of some 4000 m going down in some areas to as much as 6000 m. According to one estimate, the Continental Shelf forms about 9 per cent, the Continental Slope (including the Continental Rise) about 12 per cent and the Abyssal Plains about 79 per cent of the sea floor.

RIVERS, LAKES & FALLS

The two longest rivers in the world are the Amazon (Amazonas) flowing into the South Atlantic and the Nile (Bahr-el-Nil) flowing into the Mediterranean. Which is the longer is more a matter of definition than simple measurement.

The length of the Amazon as measured in 1969 is 4007 miles (6448 km). A subsequent calculation has placed it at 4195 miles (6750 km). The length of the Nile as measured by M. Devroey of Belgium is 4145 miles (6670 km). If we take the lower figure for Amazon (4007 miles) the Nile leads by 38 miles. If the higher length is considered (4195 miles) the Amazon leads the Nile by 50 miles.

The Biggest River. However, in judging rivers, the primary criteria are the amount of water they carry and the extent of the area they serve whether for navigation or cultivation. On these counts the Nile loses to the Amazon by wide margins. The Amazon has the longest stretch of navigable water, 2300 miles. It has the greatest flow of all rivers in the world with an average 4,200,000 cubic feet of water per second (cusecs) rising up to 7,000,000 cusecs in flood. It has the largest river basin in the world, 2,720,000 sq. miles. It has some 15,000 tributaries, the longest tributary Medeira having a length of 2000 miles.

Longest Rivers

Name	Country/ Continent	Length in miles
Amazon	S. America	4007/4195
Nile	Africa	4145
Mississippi-Missouri	USA	3710
Yangtze	China	3400
Ob-Irtysh	USSR	3200
Congo	Africa	2900
Amur	Asia	2704
Hwang (Yellow)	China	2700
Lena	USSR	2648
Mackenzie	Canada	2635
Mekong	Asia	2600
Niger	Africa	2600
Parana	S. America	2450
Yenisey	USSR	2364
Murray-Darling	Australia	2310
Volga	USSR	2290
Maderia	S. America	2000
Yukon	Alaska-Canada	1979
St. Lawrence	Canada-USA	1900
Rio Grande	USA-Mexico	1885
Purus	S. America	1850
Sao Francisco	S. America	1800
Salween	Asia	1750
Danube	Europe	1725
Euphrates	Asia	1700
Indus	Asia	1700
Tocantins	S. America	1700
Brahmaputra	Asia	1680
Syr-Darya	USSR	1680
Si	China	1650

Ganga	India	1650
Orinoco	S. America	1600
Nelson	Canada	1600
Zambezi	Africa	1600
Ural	USSR	1574
Amu-Dar'ya	USSR	1550
Olenek	USSR	1500
Paraguay	S. America	1500
Japura	S. America	1500
Arkansas	USA	1450
Colorado	USA-Mexico	1450
Dnieper	USSR	1418
Rio Negro	S. America	1400
Orange	Africa	1350
Kolyma	USSR	1335
Irrawaddy	Burma	1325
Ohio	USA	1306
Kama	USSR	1262
Don	USSR	1222
Columbia	USA-Canada	1214
Saskatchewan	Canada	1205
Peace	Canada	1195
Darling	Australia	1160
Angara	USSR	1157
Tigris	Asia	1150
Sungari	Asia	1130
Pechora	USSR	1111
Snake	USA	1038
Red Taxas	USA	1018
Churchill	Canada	1000
Pilcomayo	S. America	1000
Uruguay	S. America	1000
Magdalena	Colombia	1000

Principal Lakes & Inland Seas

Name	Location	Salt or fresh	Area in sq. miles
Caspian Sea	USSR & Iran	Salt	143550
Lake Superior	US & Canada	Fresh	31820
Victoria Nyanza	Uganda, Kenya, Tanzania	Fresh	26828
Sea of Aral	USSR	Salt	25300
Lake Huron	Canada & US	Fresh	23010
Michigan	US	,,	22400
Tanganyika	Zaire, Zambia4 Tanzania	,,	12700
Great Bear	Canada	,,	12275
Baikal	USSR	,,	11780
Nyasa	Tanzania, Malawi & Mozambique	,,	11430.
Great Slave	Canada	,,	10980
Erie	Canada & US	9930	
Winnipeg	Canada	,,	9464
Ontario	Canada & US	,,	7520
Ladoga	USSR	Fresh	6835
Chad	Niger, Nigeria, Chad & Cameroon	,,	6300
Onega	USSR	,,	†3710
Eyre	Australia	,,	†3700
Titicaca	Peru & Bolivia	,,	3200
Athbaska	Canada	,,	3120
Nicaragua	Nicaragua	,,	3089
Rudolf	Kenya & Ethiopia	,,	2475
Reindeer	Canada	,,	2465
Issyk Kul	USSR	,,	2355
Torrens	Australia	,,	2230
Vanern	Sweden	,,	2149
Winnipegosis	Canada	,,	2105
Albert	Uganda & Zaire	,,	2075
Kariba	Zimbabwe & Zambia	,,	2050

† The area is highly variable according to seasons. The figure given is the average area.

Famous Waterfalls

Name	Country	Height (ft.)
By Height		
Angel	Venezuela	2648
Kukenaam	Venezuela	2000
Ribbon	USA	1612
King George VI	Guyana	1600
Upper Yosemite	USA	1430
Tugela	S. Africa	1350
Gavarnie	France	1385
Wollomombi	Australia	1100
Takakkaw	Canada	1000
By volume of water		
		Average annual flow (cu. ft. sec.)
Guaria	Brazil	470000
Khon	Indo-China	410000
Niagara.	Canada	212200
Paulo Afonso	Brazil	100000
Urubupunga	Brazil	97000
Iguazu	Argentina	61660
Patos-Maribondo	Brazil	53000
Victoria	Zimbabwe	38430
Grand	Labrador	35000
Kaieteur	Guyana	23400

ATMOSPHERE

The atmosphere is an insulating blanket protecting the Earth. It softens the intense light and heat of the Sun. Its Ozonic (O^3) layer absorbs the most deleterious wave lengths of the Sun's ultraviolet rays and thus protects living organisms from extinction.

The atmosphere is bound to the Earth by gravity. Satellites like the Moon, which have very low gravitational power, cannot and do not hold an atmosphere.

Air pressure simply means the weight of the entire air column over a given point. Air, of course, has very little weight. A cubic foot of air weight around an ounce and a quarter. At the sea level, the air pressure is 14.7 pounds to the sq. inch. This pressure is usually described as *one atmosphere*.

Composition. The atmosphere is composed of various gases and water vapour, and in its uppermost reaches, it is charged with subatomic particles. Up to about 30 miles from the Earth, the atmosphere consists of about 78 per cent nitrogen, 21 per cent oxygen (O_2) and minor percentages of argon, carbon dioxide, neon, helium and methane, in that order. Above 30 miles, the atmosphere is made up of atomic oxygen (O_1), ozone (O_3), helium and hydrogen.

The presence of atomic hydrogen in the upper atmosphere has recently been confirmed by a camera left on the surface of the Moon by the Apollo-16 mission. The camera has revealed a cloud of atomic hydrogen extending outwards from the Earth to about 64000 km.†

Water vapour is present in the lower atmosphere, say up to 7 miles, in concentrations ranging from 0.01 per cent to 1 per cent. Although the amount of water vapour in the atmosphere is very small, its importance is very great, for without water in the atmosphere, there would be no weather on Earth. Water enters the atmosphere by evaporation from the hydrosphere (and also by transpiration of plants) and leaves the atmosphere by precipitation as snow or rain. It is a never-ending two-way traffic.

Clouds are made of water vapour that has evaporated from the Earth. They are very tiny droplets of microscopic size and are too light to fall down as rain. So they ride on the air waves until they are condensed and then fall down as rain. Clouds are classified according to their shapes. *Cirrus* clouds are shaped like ringlets and go up to 40,000 ft. in height. *Cumulus* clouds are those that rise in heaps, and *Stratus* are those that are scattered about. *Nimbus* clouds are the menacing rainstorm clouds. The various types are often found mixed together like the *Cirro-cumulus, cirro-stratus, cumulo-nimbus*, etc.

Lightning. It is the surge of electricity from the Earth that makes the lightning the awesome phenomenon that it is. The lead, however, is taken by the clouds which send down a rather weak stroke called the leader stroke. The Earth responds by sending up a much more massive stroke to the clouds. The whole thing takes less than a second, so that we see the leader stroke and the counter stroke as one flash of lightning.

Dry air is highly resistant to electricity. When the air is loaded with water vapour it becomes an easier conductor. Nevertheless, much power is required for the stroke to rip through the air. This excessive discharge of electricity heats up the air around the passage (of the stroke) to incandescent temperatures, say 10,000°C. It is this glowing air that we see as lightning flash. The heat also causes a sudden expansion of air which,

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† Some astronomers think that the Sun's ultraviolet rays break up the water molecules in the upper atmosphere into hydrogen and oxygen atoms. The lighter hydrogen atoms stay up and the heavier oxygen atoms descend to the lower atmosphere, replenishing the oxygen supply of the Earth. Thus a major part of the oxygen supply of the Earth could have been contributed by the solar ultraviolet radiation, and not by photo synthesis, as believed earlier (see *Biosphere*

SPINNING OUT THE SEASONS

Our Earth is a seasoned traveller. Autumn cools into winter and spring warms up to summer as we journey with the globe on its year-long circuit of the Sun. And it all happens the whirling Earth doesn't stand up straight.

Imagine its orbit as the edge of an oval table, with the Sun as a centerpiece. Like a cockeyed top, the Earth spins around the table edge, leaning at an angle of 23½°. Without that tilt, we would have no seasons. Every day and every night would be 12 hours long, no matter where you lived or what month it was.

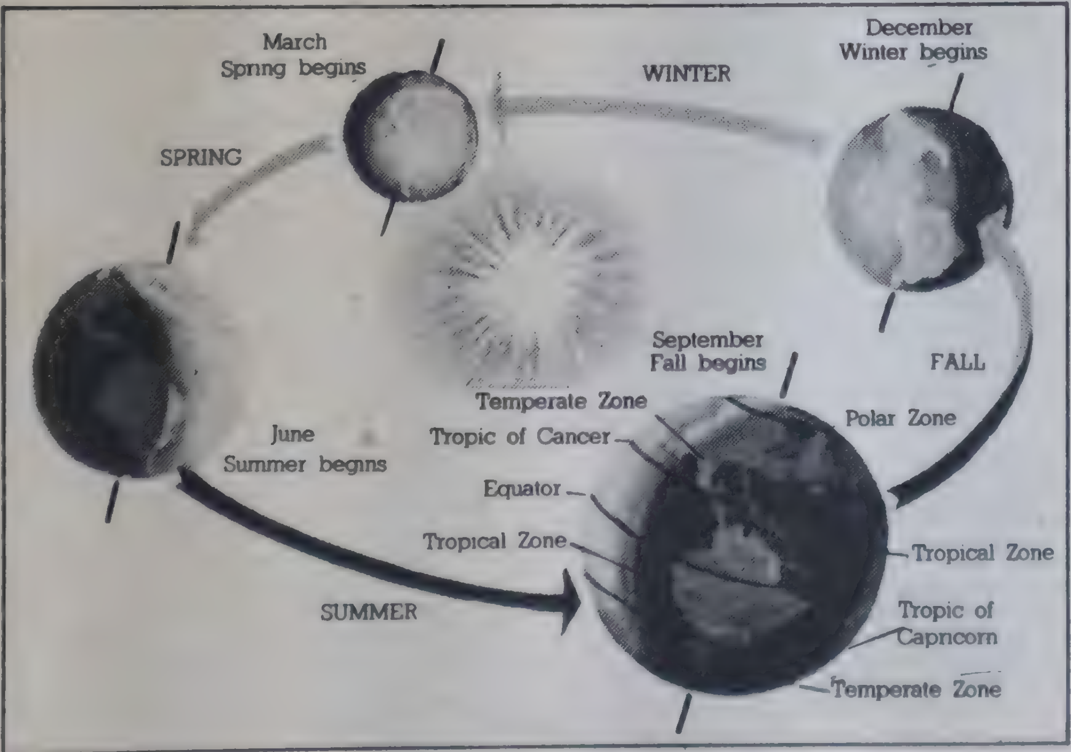
When a person in **Kansas** squints up at the Sun in June, he sees it passing nearly overhead, since the North Pole is then tilted toward the Sun. No wonder he mops his brow; the sun's rays are hitting **Kansas** almost straight-on. It makes little difference that the Earth is beginning to swing farther away from the sun in its oblong orbit. The Sun radiates energy, but not in the form of heat; sunlight only produces heat when it strikes something it can't go through, like a road or a roof or a sunbather's skin.

To see how this happens, go to a window and hold hand in the sunlight coming through the glass. Feel the warmth? Now feel the glass. It's cold because the sunlight passes right through it.

Another reason summer is warmer is that the days are longer than the nights. The dark then more of the Southern Hemisphere than of the Northern. Direct sunlight, long days - that's summer!

Now it's December, and the North Pole is tilted away from the Sun. And so is **Kansas**. The Sun's rays now strike at an angle and much of the heat is lost. And night's black skullcap has shifted northward, giving the Sun less time to warm things up. Long nights, a cool Sun low in the southern sky - that's winter!

In Australia the seasons are just the opposite; folks there sweet while people in the Northern Hemisphere shiver. In the tropics, a wide belt that straddles the Equator, the weather stays warm all year - and often gets very hot. But at the poles, the Sun's angle is always low - thus the ice caps.


March
Spring begins
WINTER
December
Winter begins
SPRING
September
Fall begins
FALL
Temperate Zone
Polar Zone
Tropic of Cancer
June
Summer begins
Equator
Tropical Zone
Tropical Zone
SUMMER
Tropic of Capricorn
Temperate Zone

as the heat disappears, contracts quickly again. This sudden expansion and contraction produce the familiar thunder clap. Although both occur at the same time, we see the flash first because light travels much faster than sound.

Three Layers. The character and composition of the atmosphere change as we go higher and higher. Altitudinally arranged, there are 4 important spheres, with 3 pauses. They are: 1. Troposphere with Tropopause, 2. Stratosphere with Stratopause, 3. Mesosphere with Mesopause and 4. Ionosphere or Thermosphere.

The *Magnetosphere* which lies beyond the Exosphere along with *Magnetopause* which marks the outer boundary of the Magnetosphere, does not form part of the atmosphere. It represents the outermost limits of the Earth.

Troposphere is the lowest gaseous layer of the atmosphere and extends to a height of about 7 miles from the Earth. The troposphere contains nearly two-thirds of the total mass of the atmosphere.

Tropopause is the layer that joins troposphere, the lowest layer, with the upper layer Stratosphere. The height of tropopause varies with latitude.

Stratosphere is the region above tropopause. It is about 20 miles thick. It is free from the violent weather changes which occur below. So, it is preferred by our jet liners. Jet liners, however, face another meance in stratosphere, namely Jet Streams. Jet Streams are high velocity air currents.

SPACE EXPLORATION

Space exploration is almost three decades old now. It started with Russia's 'Sputnik' and America's 'Explorer'. Man reached Moon in 1969 to walk on lunar soil. Then came the Space Stations called the 'Skylab' and the 'Salyut'. Man learned to walk in space without tethers and retrieve and repair lost satellites.

Space travel has opened up a new dimension in man's study of the Universe. Astronomers can now photograph in close-up the Moon and planets, which 20 years ago they could only see dimly through the dense blanket of the Earth's atmosphere. Even though observatories have been established on mountains, 2,000 m. (6,600 ft) or more in height astronomers on Earth are still hampered by the blurring and filtering effect of the atmosphere that remains above the mountains. Only by going into space can they achieve the clearest view of the sky, and also detect radiation, such as X-rays or ultra-violet light, that is blocked by the highest levels of the atmosphere.

Because space satellites make it possible to detect radiation from outer space at wavelengths formerly out of range, astronomy is undergoing a revolution similar to that which followed the invention of the telescope. Most spectacular of the new objects being studied are the pulsing, bursting, and erupting sources observed by X-ray satellites, caused as matter pours from ordinary stars on to small, compressed *Neutron Stars* or, in some cases, *Black holes*, orbiting them.

The First Sputnik. The Space age began on October 4, 1957, when Russia launched *Sputnik 1* into orbit, and this was followed a month later by *Sputnik 2* which carried the dog *Laika*. Measurement of the animal's heartbeats, temperature and other reactions, radioed to Earth, suggested that human beings might also survive prolonged periods in space.

The first US satellite, *Explorer 1*, did not follow until January 31, 1958, but its instruments made the first major discovery of the space age - the Van Allen radiation belts around the Earth, where electrons and protons from the Sun are trapped by the Earth's magnetic field. Soon after, probes were sent to explore the Moon and planets, and on the way they detected the *Solar Wind* of subatomic particles streaming from the Sun.

Mankind's first look at the Moon's far side came with the pictures from the Russian

SPACE FIRSTS

- First man to propound the space flight laws: Sir Issac Newton (1642-1727) in his book 'Mathematical Principles of Natural Philosophy'.
- First artificial Satellite put into orbit: USSR's 'Sputnik' ('Fellow Traveller'), Launched on October 4, 1957 and weighing 83.6 kg., it attained an altitude of 2285.9 km at a velocity of 28565 Km/h.
- First Manned Satellite: USSR's Col. Yuri Gagarin took off in a 4.65-ton space Vehicle 'Vostok' ('East') on April 12, 1961 to complete a single orbit of the Earth in 89.34 Mins.
- First woman in Space: USSR's Lt. Col. Valentina Tereshkova went to space in 'Vostok 6' on June 16, 1963. She completed 48 orbits in 2 days 22 hr. 42 min. Svetlna Savitskaya of USSR became the 2nd woman on Aug. 19, 1982 and Sally Ride of U.S. the 3rd woman on 18 June, 1983.
- First 'Walk' in space: Astronaut Edward H. White floated free outside the space vehicle, 'Gemini IV', for 21 minutes on June 3, 1965.
- First Indian to reach space: Sq. Ldr. Rakesh Sharma in joint Indo-Soviet flight on 3rd April 1984.

Luna 3 in October 1959; the US ***Mariner 2*** in 1962 flew past Venus, confirming both its high temperature and the reverse direction of its rotation which had been suspected by astronomers. In 1965, ***Mariner 4*** sent back remarkable photographs revealing craters on Mars. The work of the early space probes has been extended and improved by later planetary explorers, culminating in remote-controlled landings on the Moon, Venus and Mars – the last in a search for the possibility of life.

Probes are now swooping closer to the Sun than ever before to study solar activity, while others are pushing the boundaries of exploration out to *Jupiter* and beyond. Plans are being made for a probe to intercept one of those ghostly wanderers of the solar system, the comets.

Manned Missions account for only 3% of the 2,400 or so spacecrafts which were launched in the first 23 years of the space-age. The first man to be launched into space was the Russian ***Yuri Gagarin*** who orbited the Earth once on April 12, 1961. Later Russian cosmonauts, including the first space woman, ***Valentina Tereshkova***, (June 16, 1963) were able to stay in orbit for up to five days.

American astronauts made more modest flights in their smaller ***Mercury*** spacecraft, but in 1965 began the series of two-man *Gemini* flights that overtook the Russian lead in the space race. The team of astronauts in

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Sharon Christa Mcauliffe: a star-martyr in quest of space glory.

the Gemini programme practised rendezvous manoeuvres, docking procedures and space walks in preparation for the coming *Apollo* missions to the Moon.

In a Gemini capsule the astronauts had less space than in the front of a small car. The three-man Apollo, however, was relatively roomy, with sufficient space for the crew to move about and even to stand upright. The vital part of Apollo so far as landing on the Moon was concerned was the four-legged *Lunar Module*, in which two men touched down on the Moon. ***The first Moon landing, by Neil Armstrong and Edwin Aldrin from Apollo 11, took place on 21 July, 1969.***

Exploring the Moon. A total of 12 Americans walked on the Moon during the Apollo programme, bringing back 380 Kg of rocks and soil. These samples from the Moon, along with scientific measurements made on the surface and from the orbiting mother craft, have helped scientists to piece together a detailed picture of our nearest neighbour in space.

Although no more Moon trips are currently planned, men will eventually return to the Moon, probably setting up small scientific bases like those in Antarctica, from which geologists will continue their study of the Moon and astronomers will observe the sky. Such 'colonies' might also mine the Moon's crust for minerals.

Eventually, ***a manned flight to Mars*** may be planned, although not before the beginning of the next century. A round-trip to Mars would take a year or more, and would probably be undertaken by a crew of six, flying in two spacecrafts. Possibly the Mars flight will be a joint venture, with cost and construction shared between two or more nations, in the same way that the USA and Russia worked together to achieve the ***Apollo-Soyuz link-up*** in July 1975.

Incidentally NASA Scientists announced in October 1985 that Mars has significantly more water than was once thought and is still undergoing seasonal changes similar to those on Earth. They say that Mars once had a thicker atmosphere, substantial volcanic activity and enough water possibly to cover it with an ocean 10 to 100 metres deep.

Experiments in Space. In the ***Skylab space station***, and its smaller Russian counterpart called *Salyut*, astronauts have begun to extend the surveys of Earth resources and astronomical observations begun by satellites. The three Skylab crews, each of three men, brought back a total of 72 Km (45 miles) of magnetic tape logging instrumental results, 46,000 Earth resources pictures, and 175,000 images of the Sun taken through the special Skylab solar telescopes.

Space stations allow scientists and engineers to take advantage of the conditions of weightlessness and total vacuum when developing new manufacturing processes. Without gravity, for example, perfect crystals can be grown of materials for electronic components such as transistors. Materials that do not mix under gravity, for example oil and water, form a perfect blend in weightlessness.

Metals can therefore be fused, then cooled and solidified to make new alloys unattainable on Earth. Space conditions can also be used to produce ultra-pure chemicals such as vaccines, or make possible studies of cell growth that may throw new light on biological malfunctions such as cancer.

Space Shuttle. Before the promising applications of space can be fully exploited, the cost of space launches must be brought down. This has been the incentive for the development in the USA of a new transportation scheme called the ***Space shuttle***. The Shuttle's main component is a re-usable spacecraft, ***the Orbiter***, which is launched by means of rockets but can glide back to Earth like an aircraft, landing on a runway.

The winged Shuttle Orbiter is the size of a modern jetliner, with a cargo bay 18.3 m. (60 ft) long and 4.6 m. (15 ft) wide which can carry up to 29.5 tonnes into orbit. The shuttle can therefore launch several satellites at a time, and bring others back to Earth, if necessary, for repairs.

Each Shuttle Orbiter will be re-used up to 100 times largely replacing conventional rockets which can be used once only. It is hoped that the Shuttle's re-usability will bring down the cost of space missions by about 90%. The Shuttle Orbiter's first test flight into orbit, with a crew of two, took place successfully in April, 1981.

Spectacular Silver Jubilee Feat

On the silver jubilee of sending Yuri Gagarin, the first human being to space, the Soviet Union launched an advanced and ambitious space programme which for the first time paves the way for permanent human presence in space.

The larger and much advanced space station Mir reached orbit on February 20, 1986, followed by Salut T-15 carrying cosmonauts Leonid Kizim, 45 and Vladimir Solovyov, 40. They docked with Mir and carried a spectacular inter-space station flight before returning to Earth after 125 days.

Kizim & Solovyov: Space feat

Mir's launch highlights the insatiable human quest and endeavour to explore the universe. This is also a tribute to the Soviet advances in space technology and science.

Unlike the Salyut-7 in which a crew of two or three lived for spells of up to 238 days, Mir is designed to be permanently manned and the crew will be switched regularly every few months.

The launch came three weeks after the American space shuttle Challenger exploded. Mir's very name and avowed purpose of peaceful research were being presented as a stark contrast to the American 'star wars' programme.

Mir has improved communications and special cabins, each with a desk, armchair and sleeping bag. The living quarters are described as largest ever sent into space.

Mir's six docking ports will eventually play host to six separate modules, each designed for a different function. These modules are to be launched and connected to Mir over the next three years.

One will be a technical workshop, the second an astronomical and space observation laboratory, the third will be a biological research laboratory, the fourth a centre for production of drugs and pharmacological research in the pure vacuum of space and the sixth port will be for incoming cargo and passenger modules.

Mir will provide, the centrepiece of a large manned station, similar in design to the space laboratories that the U.S. hopes to have orbiting in six to eight years time.

The Soviet Union hopes to gain a lead on the Americans in using space workshops to produce defect-free semi-conductors, novel alloys and new materials for drugs. To start with, a crew of 12 could live comfortably in such a station with space for 20 or more for short periods.

Soviet scientists are hoping to send cosmonauts to Mars before the turn of the centry.

Apart from developing massive launch vehicles and booster rockets, the Soviets are working on an atomic rocket motor, which will be vital for a manned Mars journey. Besides its ability to undertake significant military reconaissance, Mir will provide the platform for scientific research in space and a staging post for a manned flight to Mars by the late 1990s.

Space Fertiliser: Potato Doubles

Soviet scientists have found that the application of "a space" fertiliser to soil helps increase the potato harvest by nearly 50 per cent.

The fertiliser, composed of all elements present in the Tunguz meteorite, was developed at the institute of agricultural utilisation of reclaimed lands in the Soviet Union. These elements include selenium, bromine, arsenic, mercury, lead, zinc, silver and other metals, reports Tass.

Scientists found that vegetation was much richer in the area where the meteorite fell. Trees grew faster and were less affected by various unfavourable environmental factors.

The "space" fertiliser favourably affects the growth of cereals. They usually help increase the harvest of maize wheat, beet and other crops by 20 to 40 per cent.

The first Space Shuttle 'Columbia' reached orbit on April 12, 1981 - the 20th anniversary of man's maiden trip to Space. Shuttles Columbia, Challenger, Discovery and Atlantis achieved many firsts in space exploration and research. Shuttle 'Challenger' took Sally Ride, the first U.S. woman, to space on June 18, 1983. The first night flight, launched on August 30, 1983, carried also America's first black, Guion S. Blueford, who performed space exercises under the eye of Space Physician William Thornton, aged 54, the oldest astronaut to make a space journey.

Atlantis, the fourth and final member of the NASA's Shuttle fleet was launched on October 3, 1985. It deployed two bomb-shielded, jam-proof Air Force Communication Satellites.

Space Repair. In November 1984 Shuttle succeeded in retrieving two malfunctioning Satellites, namely Palpa B-2 abd Westar-6. These Satellites could be used again. Shuttle made successful retrieval and repair of Satellite Solar Max in April, 1984. For this historic feat astronauts had to get out of the Spacecraft and 'walk on space' for as long as 6 hours and 44 minutes.

'Discovery' completed a secret military mission on Jan. 28, 1981 when it launched the first of the four Spy Satellites against Soviet Union called SIGNIT (Signal Intelligence). These reconnaissance satellites will peep into Soviet territory day and night. They can sense the movement of even a small vehicle in the dead of night.

The U.S. has spent no less than Rs. 30,000 crore for the Shuttle programme from 1972 till 1985. The U.S. had originally planned to complete 500 Shuttle trips by 1991. But, it became evident that this ambitious target would not be achieved because of various reasons. According to NASA's re-schedule, they would be able to complete 165 flights by 1991. This itself will be no mean achievement. The US plans to construct a new launching pad at Cape Canaveral and another one at Vandenburg, California.

Challenger Tragedy. The American space programme received a set back on January 29, 1986 when their Space Shuttle Challenger exploded in mid-air, 75 seconds after lift off. The crew — six astronauts and a woman school teacher named Christa Mcauliffe— were all dead.

America was shocked into disbelief that their space programme was so ill-conceived. After 25 years of space exploration and 55 missions, the U.S. faced space history's worst disaster. With so many safety devices built into the S 1.2 billion spacecraft and repeatedly tested during the previous 24 successful flights of the shuttle in five years, it was beyond imagination that something would go wrong with the booster rocket.

It was precisely what happened when the ghastly tragedy was enacted. The seven astronauts were promptly declared "national heroes". In the aftermath the NASA itself was overhauled. Vice-Admiral Richard Truly, astronaut for 14 years, replaced Mr. Jesse Moore as Director of the Shuttle programme.

Challenger tragedy was a set back not only for the U.S., but also for many other countries including India which had programmed multi-purpose satellites to be launched by the US shuttles. President Reagan has ordered to build a new shuttle. The work is scheduled to begin in 1987 and the new shuttle will be ready by 1989. But NASA has announced that it would not be lanuching private satellites any more.

Mir Station. Meanwhile the Soviet Union went further ahead with her spectacular spacefeat. On February 20, 1986 it launched a new orbital space station called 'Mir' (peace) described as a third generation space laboratory from Baikonur Cosmodrome in Kazakhstan. It joined the Salut-7 space station that has been in orbit around the Earth since April 1982.

'Mir' is a multi-modular station which can accommodate six spacecrafts at the same time. Two Soviet cosmonauts were launched to space on Soyuz T-15 on March 13, 1986 for a rendezvous with 'Mir'. The craft docked with the space station the next day. For the first time in Soviet space history, the entire launch was televised live throughout the world.

The Salut crew, Leonid Kizim and Vladmir Solovyov, conducted several experiments including flying from one space station to another. They flew to Salut-7 from Mir, spent 50 days on board and flew back successfully.

Both the Soviet stations have orbits on the same plane some 3000 km apart but the shuttle takes more time than a trip either way with earth because the space ship Soyuz uses the laws of the celestial mechanics—changes orbits—for the shuttle in manoeuvres designed to save fuel.

Salyut-7 is in the near-earth orbit for four year's during two of which it has been manned by nine crews including an Indian and a French cosmonaut.

Both the Soviet cosmonauts returned to Earth on July 16 after spending 125 days in space.

Other Space Powers. The European consortium, China, Japan, India and Brazil are also going ahead with their space programmes.

The European Space Agency, an 11-country consortium had a setback on May 30, 1986 when the *Ariane* rocket exploded after take off from Kurou, French Guiana, along with the telecommunication satellite.

China is looking for foreign customers for a launch programme—only Sweden has accepted so far—and a Japanese project is on the drawing-board.

(India's Space Programme: See India)

BIOSPHERE

The idea of a biosphere (sphere of life) was first suggested by the Austrian geologist Eduard Suess nearly a century ago. It was at that time an insignificant concept. Today, however, the biosphere has become the most important problem faced by man.

The distinguishing feature of the biosphere is that it supports life. It is estimated that the biosphere contains more than three hundred and fifty thousand species of plants including algae, fungi, mosses and higher forms of plants, and eleven million animal species ranging from uni-cellular protozoa to man. The biosphere supplies the essential requisites of life for all these species, namely light, heat, water, food and living space or habitats.

The biosphere, or the *eco-system*, as it is generally called, is an evolutionary system. It represents a stable equilibrium of various physical and biological factors which have been operating in the past. The organic continuity of the system rests on a delicate net-work of interdependent relationships. The air, the water, man and the animals, plants and planktons, the soil and bacteria are all invisibly interlinked in a life-sustaining system we call the environment.

Rhythm. The eco-system or the environment has a rhythm and movement of its own which depend upon a whole set of delicately balanced cycles. All living organisms – microbes, plants, animals, man – have survived by adjusting themselves to the environment and attuning their lives to its rhythm. It is, therefore, absolutely necessary that these cycles should be maintained unimpaired.

What keeps the biosphere going is solar energy which comprises 99.98 per cent of the total energy supply of the biosphere. Day in and day out the Sun pours forth its energy in the form of sunlight. Light consists of bundles of energy called *quanta*. The energy content of a quantum of light is proportional to its frequency. The shorter the wavelength, the higher the frequency and the greater the energy content, (see *Outer Space* supra).

Photosynthesis. The process by which solar energy is transferred to molecules is called photochemical process. In this process sunlight excites the electrons in a molecule and kicks them out. This releases electrons to pair with other electrons from a neighbouring atom or molecule and thus forms electron-pair bonds. These new bonds create new molecules.

The most important photochemical activity in the biosphere is photosynthesis in plants. Photosynthesis is a complicated process. The light absorbed by chlorophyll molecules and by other pigments in plants is transferred to electrons in such a way as to create strong oxidants, that is, molecules that readily remove electrons from other molecules (oxidise them), or reductants, that is, molecules that readily supply electrons to other molecules (reduce them).

It is these oxidants and reductants that assist plants in producing carbohydrates and oxygen from molecules of carbon dioxide and water. Plants respire (give out) oxygen but retain carbohydrates which are converted to energy and stored in the form of chemical bonds, notably those of adenosine triphosphate (ATP) which is the basic energy currency of all living cells. High energy phosphate bonds of ATP contain 12000 calories and release 7500 calories when broken.

Life Process. This energy is carried up the food chain by herbivores feeding on plants and carnivores feeding on herbivores. Omnivores like man draw their energy both from plant and animal sources. Much of the energy drawn by plants and animals (including man) is consumed and spent in maintaining the process of life.

The energy that is not expended in the course of life is stored in dead matter. Decomposing bacteria break up the dead matter and convert it into *humus* or *organic sediments*, releasing carbon dioxide, water and heat into the biosphere. Thus the basic ingredients of life are returned to the soil. The plants draw their nutrients from the soil and keep the cycle going.

Heat Cycle. Heat is one of the prime requisites of life. This is supplied by solar radiation. It is calculated that the solar heat reaching the Earth's orbit (just above the atmosphere) amounts to about 2 calories per sq. centimetre per minute. But the Earth gets only less than half the radiation reaching the top of the atmosphere.

About 2 per cent is absorbed by the ozone layer in the atmosphere. Atmospheric water vapour, carbon dioxide and dust particles absorb around 18 per cent. The clouds reflect back into space some 23 per cent. About 22 per cent is scattered by the atmospheric dust. The Earth receives only the balance of 38 per cent. But the story does not end there. Out of the 38 per cent solar radiation received, the Earth re-radiates about 7 per cent by long wave radiation, thus reducing the stock of terrestrial energy to 31 per cent.

At the same time, out of the 22 per cent scattered by the atmosphere, 16 per cent ultimately reaches the Earth as *diffuse radiation*, the rest 6 per cent being irretrievably lost in space. Thus, on the whole, the Earth receives about 47 per cent of the solar energy reaching the atmosphere. Meanwhile, the atmosphere acting as an intermediary between the Sun and the surface of Earth, retains about 5 per cent of the energy as sensible heat and about 24 per cent as latent heat in water vapour.

It is essential that the absorption and re-radiation of heat should ultimately balance. Otherwise the Earth would experience a net increase in heat or a net decrease according as a surplus or deficit of heat results from radiation. The balance between absorption and re-radiation is mainly regulated by water vapour in the atmosphere.

There is only a very little amount of water in the atmosphere, about 0.001 per cent. This insignificant amount of atmospheric water exercises an influence on the climate of the Earth, out of all proportion to its total mass. Besides, keeping the balance between the absorption and radiation of heat, it controls the water cycle and determines our climatic conditions.

Carbon Cycle. The biosphere contains a complex mixture of carbon compounds, in a continuous state of creation, transformation and decomposition. Practically all organic matter originates in the process of photosynthesis. The plants use the radiant energy of the sun to convert carbon dioxide and water into carbohydrates by splitting water to derive hydrogen, and by drawing in carbon dioxide from the air. In the process the plants release free oxygen (O_2) into the atmosphere. While plants absorb carbon dioxide during photosynthesis, all living organisms respire and release carbon dioxide and decomposing bacteria do the same in regard to dead matter. But while respiration and decomposition go on all the time, photosynthesis takes place only during daytime. During daytime, carbon dioxide in the atmosphere comes down from an average of 320 parts per million to around 305 parts but at night it increases, going up to as much as 400 parts per million, near the ground level.

Apart from the daily production and consumption of carbon (in the form of carbon dioxide), the Earth has a vast stock of carbon in permanent form. This stock consists of inorganic deposits (mainly carbonates like calcium carbonate etc.) and organic fossil deposits (chiefly coal, shale and oil). When we burn fossil fuels, we are merely adding more carbon dioxide to the atmosphere which has an excess supply already.

Oxygen Cycle. Oxygen not only supports life but also plays a fundamental role as a building block of practically all vital molecules accounting for about a fourth of all the atoms in living matter.

The most recent factor affecting the oxygen cycle of the biosphere and the oxygen budget of the Earth is man himself. He inhales oxygen and exhales carbon dioxide, thus reducing the stock of oxygen and increasing the supply of carbon dioxide. He goes further and burns fossil fuels, depleting the oxygen supply still further. He reduces photosynthetic activity, by cutting down forests and replacing them with cities.

Some astronomers think that the original supply of oxygen in the atmosphere came from the ultraviolet rays of the Sun which broke up the water molecules in the upper atmosphere into hydrogen and oxygen (see *Atmosphere* supra). Whatever may be the initial source of the oxygen in the atmosphere, what is important is that the plants are now augmenting the oxygen supply by photosynthesis. They are not only augmenting our oxygen supply but also reducing the total supply of carbon dioxide which is increasing to alarming dimensions.

Nitrogen Cycle. Nitrogen as it obtains in the atmosphere cannot be used by the higher organisms. It has to be "fixed", that is, incorporated into a chemical compound. Nitrogen, in other words, has to be converted into ***ammonia*** or ***amino acids***, so as to be of use to plants and animals.

Fixation of atmospheric nitrogen on land is carried out by organisms called diazotrophs who possess the genetic code for the synthesis of enzyme nitrogenase which catalyses nitrogen fixation. These organisms fall into two broad classes – symbiotic and non-symbiotic. Symbiotic diazotrophs operate in association with some species of plants like legumes. They contribute the lion's share (83%) of nitrogen fixation on land. Non-symbiotic agents who contribute the rest (17%) include blue green algae, and aerobic (those requiring oxygen) bacteria and anaerobic (those who do not require oxygen) bacteria.

The total annual nitrogen required by the biosphere is estimated to be 1050 million metric tonnes (mmt). Of these the diazotrophs account for only 140 mmt. Non-biological agents like lightning or fire contribute 40 mmt. The balance of 870 mmt. comes from nitrogen locked up in dead plants and animals. These are recycled by nature as nitrates. The nitrates are converted into amino acids by decomposing bacteria. In aerobic conditions, where oxygen is available, bacteria will again intervene to oxidise the amino acids into carbon dioxide, water and ammonia. Thus nitrogen in the form of ammonia is returned to the atmosphere, where it gets dissolved in rain water, and ultimately replenishes the Earth.

Man has interfered with this natural cycle by industrially fixing nitrogen. He is now converting nitrogen into assimilable forms by artificial methods. Production of nitrogenous fertilisers has increased phenomenally in the last few decades. This means that there is an extra input of nitrogen into the atmosphere. This extra input is already larger than the natural output. We cannot now say how far this extra input will affect the biosphere or in what direction.

Water Cycle. Water plays a versatile role in the functioning of the biosphere. It is essential to all forms of life, plants, animals and man. The water cycle has two distinct branches – the atmosphric branch and the terrestrial branch. In the atmosphere, water exists mainly in gaseous form. On the Earth, liquid forms and solid forms (ice) predominate.

Water is important to the biosphere in that it is from water that the biosphere draws its most abundant element, hydroge Hydrogen in the form of carbohydrate constitutes a very important source of energ for all living things. Although we have plentiful supply of water in the oceans, it not of direct use to us.

We depend upon a small stock of water less than 1 per cent – contained in our river and fresh water lakes and in the subsoil. Th little stock of water is replenished by an eve smaller stock of mobile water – less tha 0.001 per cent – which circulates in th atmosphere as water vapour much of whic ultimately falls down as rains.*

The water cycle of the biosphere depend on the reciprocity of evaporation and prec pitation. Liquid water on the Earth goes int the atmosphere as vapour by evaporatio and transpiration of the plants. The vapour i returned to Earth (precipitation) as rain o snow.

ECOLOGY

Man's meddling with nature, chemical effluents, nuclear waste, acid rain and ever increasing presence of carbon-dioxide in the atmosphere have resulted in the greatest ecological crisis known to mankind. The death of 2500 persons at Bhopal in 1984 due to inhalation of poisonous gas leaked out of an insecticide plant is the latest warning to humanity.

Ecology has been defined as the study of organisms in relation to their environment. This covers the whole world of organic life—plants including fungi, animals including microbes and man. Then, there is the environment itself, which includes not only the animate organisms that populate the biosphere but also the inanimate forces operating in nature.

Man-made Crisis. Though ecology covers all species of life, the species which occupies the centre of the stage is man, because he, alone of all species, had set out on a confrontation with nature. His fight with the established natural systems has had a long history. But it is only in the latter half of the 20th century that it had assumed the proportions of a crisis. This is what is described as the *Ecological Crisis*.

When man gave up living on what food he found in nature and settled down to grow his own food, he began inferfering with natural systems. This happened during the ver dawn of history when men built the first grea river valley civilizations of Sumeria, Egyp and the Indus Valley. Ever since, man ha been incessantly engaged in struggles of on kind or another with natural systems.

Since the Industrial Revolution, his interference with the ecosystem had increase both in volume and in intensity. Man had b the time colonised the far corners of th Earth. Everywhere he went he had fough nature and won. In the first flush of succes he described his progress as the *Conquest o Nature*. Now he wonders who is conquerin whom.

Interdependence. In the ecosyste all species of life, plant and animal, ar inter-linked with one another. Interferenc with any species will have long standin repercussions on others. We have bee massively intervening in the environme without quite understanding its complications. Often enough, we realise the magnitude of the damage we have wrought long after the mischief had been done and the situation has passed beyond repair. The Dodo is a typical case (see Box.).

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* See *Hydrosphere*

It is clear that the biosphere is an integrated whole and that its numerous parts are interconnected. Prof. Barry Commoner points out that these interconnections, especially along the food chain, accelerate the impact of our inroads into the environment and amplify them greatly. Commoner gives the following example. If we put one unit of insecticide per gram in the soil, the earthworms living in the soil will contain 10 to 40 units per gram and in woodcocks feeding on the earthworms, the insecticide level will rise to 200 units per gram.

Land & Water. Agriculture was man's first great challenge to natural systems. He cleared forests to grow food for himself and built huge irrigation systems to assure a perpetual supply of water for his crops— and prospered. The ancients knew, as Plato tells us, that over-cropping and over-grazing will lead to soil erosion which may make deserts of fertile land. But that did not stop them. Look at the debris which our great civilizations have left behind them.

Ancient Sumeria—modern Iraq—was the granary of the *great Babylonian Empire*. The Sumerians harvested two crops and grazed sheep between the crops. Today less than 20 per cent of the land in Iraq is cultivated. "The landscape is dotted with mounds representing forgotten towns, the ancient irrigation works are filled with silt—the end product of soil erosion—and the ancient seaport of Urs is now 150 miles from the sea with its buildings buried under as much as 35 feet of silt".*

Salinity. Apart from erosion there is another factor that may convert good land into barren tracts. This is salinity. Salinity appears where the groundwater table is lowered owing to the excessive consumption of groundwater resources. All over the world there are large tracts of land blighted by salinity—in Mexico and several other parts of America, in Tanzania and many other parts of Africa, in India, China and South East Asia. In spite of this bitter experience, the reckless tapping of underground water goes on merrily all over the world. Peter White writing on Greece in the *National Geographic* (March 1980) says, "Driving eastward in Macedonia, I get more intimations of new-found prosperity....Around Pella so many wells have been dug that the fountain of Alexander the Great has dried up".

We have through the centuries created vast deserts of fertile lands. But we do not yet know how to make the deserts bloom. Despite the claims of Israel, it is still a far-off dream. All our natural resources are going the same way. We are consuming our minerals with an abandon that is hardly credible.

Protest to Dam on Danube

Hungarian ecologists failed to stop a two-billion-dollar dam project on the Danube in 1986.

Overriding protests from ecologists in both Austria and Hungary, the two neighbouring countries signed a deal in May to build a huge hydroelectric power plant at Nagymaros, north of Budapest. Austrian banks are supplying credit in return for electricity.

But sources close to the Danube Circle, an East European ecological pressure group, hope the Chernobyl nuclear leak will raise the profile of environmental debate in Hungary.

The group believes the dam project will prove disastrous for Hungary's drinking water supplies and also prove expensive.

Work has already begun on the joint dam project with Czechoslovakia for a twin hydroelectric dam system from Gabcikovo (near Bratislava) to Nagymaros, 220 km downstream on the scenic Danube banks.

Alternate Power. Since the Industrial Revolution our exploitation of natural power resources, coal and oil, has assumed alarming proportions. The Industrial Revolution itself was powered by coal. Then came oil. Both threaten to give out, oil sooner than coal (see *Coal, Oil*). Now that the OPE countries are holding the rest of the world to ransom for oil, we have begun to think of alternate sources of power that will not run out on us like coal and oil. This is the only silver lining on the overcast power front.

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* La Mont Cole, Chairman, Dept. of Zoology, Cornell University

What we destory, we can't replace. Nor can nature—not at this speed. It has taken millions of years for nature to stock up our present supply of minerals and fossil fuels but it will take us only a few centuries to run through them. As pillagers and predators, we surpass all other species just as we do as thinkers and creators. Only our thinking and creative abilities are poor compared to our capacity for unthinking destruction.

Dumping Waste. No bird fouls its own nest. But the doubly wise man (homo sapiens)§ excels in this obnoxious practice. It has been estimated that in Britain the average person throws out about 1.5 lb of garbage every day. In the US the wastes dumped into the biosphere are much greater—more than 4.5 lb per person per day. To these familiar wastes are added whole heaps of industrial by-products, which neither the producer nor the consumer wants.

The advance of technology in recent years has been dubbed the *Technological Revolution*. This revolution, like all revolutions, has backfired. While at one end it has hastened the consumption of scarce materials, it has at the other end thrown up a lot of unwanted wastes. These wastes are piling up and have already become unmanageable. Some of these wastes like synthetic plastics are not 'bio-degradable'. Therefore they may persist for years as abiding threats to the eco-system.

Pollutants. But worst of all are the pollutants which a sophisticated technology has been spewing all around us. Careful studies have shown that air pollution can damage vegetable crops and in general affect plant growth. This is reflected in the low nutrient quality of the plant products and consequent ill effects on the health of the animals and people who depend upon these crops. Here again, we have a remarkable *amplification* But far more important are effects that arise secondarily.

Effluents. These are wastes containing assimilable nitrogen and phosphates which our factories are discharging into surface waters, like rivers and lakes. They enrich the water leading to the overgrowth of algae and similar organisms to the detriment of other organisms and finally to the extinguishment of all. "As large a body of water as Lake Erie", says Commoner, "has already been overwhelmed by pollutants and has in effect died...Sewage and industrial wastes and run-off from heavily fertilised farmlands have loaded the waters of the lake with so much excess phosphate and nitrate as to jar the biology of the lake permanently out of balance. The fish are all but gone".

Carbon dioxide. The widespread use of combustible fuels bodes ill for all species of animals in two ways. It depletes the oxygen supply and increases carbon supply.

"When and if we reach the point, where the rate of combustion exceeds the rate of photosynthesis, we have not only to worry about running out of oxygen at night (there is no photosynthesis in the absence of light) and in winter but the oxygen content of the atmosphere will actually decrease"†† while the carbon dioxide content increased.

"Between 1860 and 1960, the combustible fuels added nearly 14 per cent to the carbon dioxide content of the air, which had until then remained constant for many centures"** When you burn a ton of hydrocarbon you obtain as byproducts about one and one third tons of water and about twice this amount of carbon dioxide. "Both carbon dioxide and water varpour make a huge green house of the Earth because while they allow sunlight (short wave radiation) to reach the Earth, they prevent longwave heat radiation from the Earth escaping into space (see *Heat cycle*, *Biosphere* supra). The temperature of the Earth is therefore certain to rise as the amounts of carbon dioxide in the atmosphere increase".

"However, the greatest single source of contamination of the planet now is radio activity, from the explosions of nuclear weapons in the atmosphere. Fallout from nuclear tests contaminates every part of the Earth's surface and all its inhabitants".

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§ See *Descent of Man*

†† La Mont Cole

** La Monti Cole

25 Years of World Wild Life Fund

World Wildlife Fund (WWF), now renamed Worldwide Fund for Nature, celebrated its silver jubilee at the monastic town of Assisi in 1986.

Of the more than 4,000 projects in 130 countries that WWF supported in these years, "Project Tiger" is the best illustration of its approach.

When Mr. Guy Mountfort, WWF founder and trustee, proposed a campaign to save the endangered tiger in 1972, a wild life census had revealed that the tiger population had dwindled to 1,827 from an estimated 40,000 in 1900. On the tenth anniversary of the project in 1983, the count was nearly 4,000.

When Mr. Mountfort, accompanied by Mr. Charles de Haes, now director-general of WWF International and Mr. Zafar Futehally ex-vice president of WWF India had called on Mrs. Indira Gandhi and offered to raise one million U.S. dollars for creation of tiger reserves, she had agreed without hesitation.

Mrs. Gandhi appointed Dr. Karan Singh, then minister for tourism and aviation as in-charge of the task force.

The reserves selected range from the mangrove wetlands of West Bengal to the arid bush forests of Rajasthan and the dense bamboo and teak forests of Maharashtra. They cover 24,712 sq.km. of land of which 8,608 are core areas.

WWF has turned over nearly 1 million dollars to India's "Project Tiger" and spent most of the rest on tiger conservation in Bangladesh, Bhutan, Malaysia, Indoneisa and Thailand.

The Union government had spent nearly U.S. $ 19 million on the project since its inception. Some 6,000 villages had to be moved out of the core areas. These communities were provided with new houses, schools, bio-gas plants to replace wood as fuel and given assistance to improve their farming.

Project Tiger. to save the endangered species

Green Movement. It seems that mankind's consciousness has been aroused very strongly about the need for environmental protection and ecological preservation in recent years. Protest rallies and mass demonstrations around the globe are indications of the growing awareness. Green Movements sprouted in US, Europe & Australia. India has its Chipko Movement.

Environmentalists under the banner of 'Greens' won 28 seats in West German Parliamentary Election in 1983 and Green Peace, the environmental protest group maintained its pressure on governments to ensure adequate protection to life on Earth. Nuclear explosion and dumping of nuclear and toxic chemical wastes without safety measures were stoutly opposed in many parts of the world.

Green Peace Ship 'Rainbow Warrior which was on its way to lead a "Peace fleet" to the French nuclear test site at Mururoa Atoll in the Pacific was sunk in Auckland harbour on July 10, 1985 by French agents and the ensuing political scandal shook the very foundation of the French Government.

DESCENT OF MAN.[*]

Man has appropriated to himself the highest echelon in the biological hierarchy. But for all his pretensions of superiority he could not rid himself of many characteristics which he shared with lowlier species during the evolutionary process.

Biologically man belongs to the family of mammals and among mammals to a sub-family called the placental mammals. As a mammal he shares with other mammals, warm blood, hair and milk glands. As a placental mammal his young are carried by the female for a long period prior to birth, attached by a placenta to the uterus, through which the child receives nourishment from the mother's bloodstream.

Mammals. The mammals are today the most biologically advanced species and dominate the world of organic life. But more than 75 millions of years ago when gigantic reptiles ruled the Earth, the mammals were a frightened and insecure group. In order to survive and reproduce "this early stock of hairy warm-blooded creatures (of whom the tiny shrew is typical) had to keep to secret ways or to the dark, had to eat whatever could be found and had to carry their developing young within them rather than lay eggs where they could too easily be discovered (by other animals).

"They were on the run, driven more or less underground or to foraging at dusk or through the night—a desperate kind of life that demanded a high fertility and a quick replacement of generations."[‡] This explains the fantastic evolutionary progress that the mammals had achieved. They had changed from the tiny scurrying creatures they were into undaunted hunters lording it over all other species.

Primates. Among mammals, man belongs to the order of Primates. The Primates are distinguished by hands eminently adapted for grasping, an excellent vision, a keen sense of hearing but a poor sense of smell. The primates consist of monkeys, apes and man. The monkeys form a class by themselves, called the Lower Primates or Prosimians. Lemurs, lorises, tarsiers and tree shrews belong to this group.

Man and the apes together make up the Higher Primates or anthropoids. The anthropoids are in their turn divided into two groups, the *Pongidae* (apes) and the *Hominidae* (man). The hominidae differ from the pongidae in the shape and structure of the pelvis, legs and feet. This means that the hominidae can walk upright on their legs while pongidae have to use their hands as well for locomotion. The pongidae comprise four families—the gorilla and the chimpanzee of Africa and the gibbon and orang-utan of South-East-Asia. The hominidae consist of only one family—man.

Human Revolution. According to Charles F. Hockett, the Homo Erectus represents our earliest truly human ancestors. He says "As soon as the hominids had achieved upright posture, bipedal gait, the use of hands for manipulating, for carrying, for manufacturing generalised tools and language, they had become men. The human revolution was over."

"The species Homo Erectus lived at some time during the Middle Pleistocene apparently in a tremendous territory extending from Java and China to Europe, North Africa and may be to South Africa"[†]. This species was the first to achieve what may be called the *Homo Erectus Complex*. This consisted of six items, 1. Achieving prelanguage, 2. developing striding gait instead of shuffling gait, 3. successfully venturing out into open savanna or grassland, 4. engaging in more extensive and effective hunts with more co-operation, 5. developing more advanced carrying techniques, and 6. beginning

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[*] The title 'Descent of Man' used by Darwin has been amended by a later anthropologist as the 'Ascent of Man', which is also true

[‡] Norman J. Bernl—(Bracketed sections ours)

[†] Charles F. Hockett

Modern Man Arose in Africa

A new analysis of chromosomes from Africans and Eurasians support the view that modern man arose in Africa, but scientists say the question remains far from settled.

Research has suggested that Africa is where the modern homo sapiens have evolved. But fossil evidence is very scanty and data from previous molecular research such as the new study "still needs to be improved upon," said study co-author, Dr. James Wainscoat of John Radcliffe Hospital in Oxford.

Dr. Wainscoat, with colleagues at the University of Oxford and University College Hospital Nigeria, studied variations in chromosomes of people from eight population groups. They reported their work in the British science journal, **Nature.**

Chromosomes are microscopic strands in every body cell that carry genes, the blueprints for the cells. Genes are basically sequences of chemicals arranged in sort of a morse code. Between genes lie other sequences, called introns, whose functions are not fully understood.

Humans carry 23 pairs of chromosomes. The researchers focussed on introns along the chromosome identified as number 11, Dr. Wainscoat said, They used special enzymes to find whether specific chemical sequences were present at five places along the chromosome.

Then noting where the sequences were present and absent for each chromosomes tested, they looked for how that pattern differed among the population groups.

The idea is that the greater the differences between two population groups, the farther back in time their languages split from a common ancestor.

Researchers found in general that the patterns in Africans, from Gambia, Kenya and Nigeria differed greatly from those found in British, Cypriot, Italian, Indian, Thai and Melanesian or Polynesian people.

The 2.5 million-year old skull held by Mr. Alan Walker who discovered it in "the cradle of mankind" in Kenya.

This suggests that the human population split long ago into African and European groups, consistent with the idea of an African "founder" populations, the researchers said. They also said fossil finds in Ethiopia and South Africa support the hypothesis. Dr. Wainscoat said unpublished data shows the same results for other African populations as well.

to lose their hair.

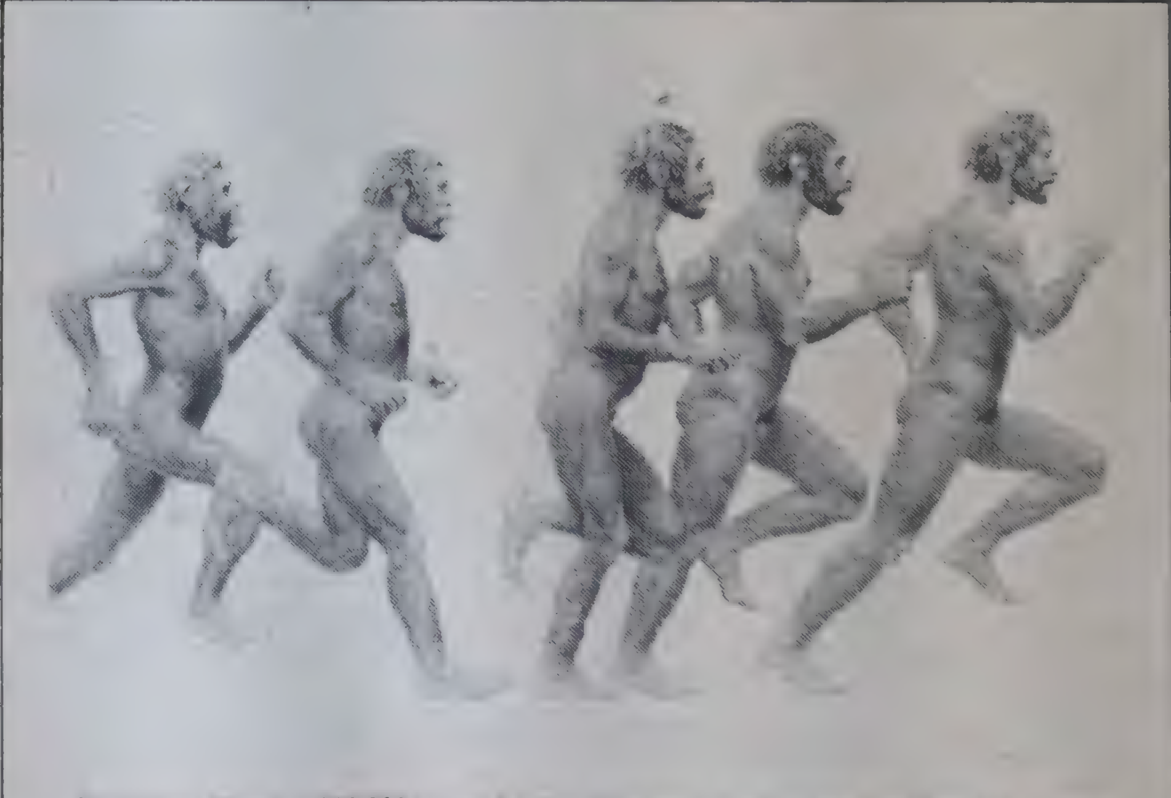
Homo Sapiens. The next turning point in evolution came around 50,000 years ago, in the warm interval when the ice was retreating in the Pleistocene age. Around this time, a new type of man, the ***Homo Sapiens*** (thinking man), began to crop up here and there in the form of various successful mutations. By this time, says Charles F. Hockett, "the genus Homo consisted of a single, tightly connected, widespread but highly diverse species. All non-striding hominids were long gone. All surviving hominids were heirs to the full erectus complex. The brain had grown approximately to its present size with some variation in average mass from one population to another".

The sapiens complex as it emerged showed four distinctive features: 1. a more efficient brain, 2. true language, 3. a flat face, and 4. exploitation of the kinds of articulatory motions that are now universal.

The new complex emerged within the framework of the erectus complex and did not undo any of its advantageous features. But it was a new key complex and gave rise to a new adaptive radiation, the second phase of human radiation. The sapiens complex spread just as the erectus complex did—by migration and gene flow.

The tempo, however, was almost unbelievable. The complex bestowed upon those who attained it an unprecedented capacity to co-operate, to move, to improve technology, to adapt and to absorb or eliminate less gifted competitors.

Neanderthals. By about 40,000 years ago, there was no surviving group of hominids anywhere (with the possible exception of the Neanderthals) who had not absorbed the improved techniques. The Neanderthals persisted in Europe for many years after the sapiens complex became established. This tells us that the sapiens complex did not arise in Europe. But neither do we know where the sapiens complex originated. The Neanderthals lacked the flat baby face that had appeared elsewhere (among the sapiens) and their brains averaged somewhat larger than our own today or that of the Old World contemporaries of the Neanderthals.



Evolution: It took 4,000,000 years for the 'afarensis' to develop into Homo Sapiens.

GENES

Gregor Mendel in 1885 showed that certain hereditary factors operate in all biological species. The Danish biologist Wilhelm Johannsen called these factors Genes. The name stuck. It is now known that the genes not only transmit hereditary traits but also mastermind the entire process of life.

The genes are located in the chromosomes which are themselves situated in the nucleus of the cell. The genes, the chromosomes and the nucleus together constitute – to use a famous phrase of Churchill's – "a riddle wrapped in a mystery inside an enigma". The genes form the riddle, the chromosomes represent the mystery and the nucleus the enigma.

Structure. Much of the mystery surrounding the genes was cleared up with the discovery of the structure of the DNA (Deoxyribo Nucleic Acid) announced by J. D. Watson and Francis Crick in April 1953. In structure the DNA resembles a long rope ladder twisted around like a corkscrew. If we straighten the ladder, we shall see that the two sides of the ladder are long chains of two substances – sugars and phosphates – in repeated sequences. These form the backbone of the DNA. Their structure never varies.

The secret of the DNA lies in the rungs that connect the two sides of the ladder. These rungs form two parts or two half-rungs, each half being attached to one side of the ladder. These half-rungs can be one of four types of little molecules: *Adenine (A), Cytosine (C), Thymine (T), and Guanin (G)*. Each of these half-rungs together with the attached segment of the ladder is known as a *nucleotide*. A half-rung on one side will only join with a specified partner on the other side. This pre-determined arrangement for specific partners suggested that these little molecules formed the letters of a fixed code or the words of a new language. Indeed, it has turned out that this is exactly what they are.

Genetic Code. An *A* will form a rung only with a *T* and a *C* only with a *G*. So, the pairs *A–T, T-A, C-G* and *G-C* form in a way a four-letter alphabet with which messages can be spelt out. This four-letter alphabet makes up what is known as the *Genetic Code.* The genetic code is not only complex but also extensive. In 1977 Fred Sangar pointed out that the DNA code of a virus, when decoded by the computer came to a print-out of 15 metres. At this rate, the computer print-out for the human DNA would stretch to 16,000 km.

Enormously long strands of DNA intertwine within the core of living cells. So narrow and tightly coiled is this DNA that all the genes in all the cells in a human body would easily fit into a ½ inch cube. Yet, if all these DNA strands are unwound and joined together it would stretch from the Earth to the Sun and back.

Genetic Activities. The genes control all functions of the cell and body growth. The two main events in the life of most cells are multiplication (by division) and synthesis of proteins. Both these operations are carried out on the basis of the blueprints coded in the genes.

Before a cell divides, the DNA ladder splits down the middle. The nucleotides *As* separate from the *Ts* and the *Cs* from the *Gs* much in the same way as a zipper is pulled apart. Now, the separated nucleotides A, T, C, and G pick up appropriate partners from the free-floating nucleotides in the cell. Thus the split ladder becomes two whole ladders of DNA, each an identical copy of the other. Once the division of the DNA is completed the rest of the cells, other organelles also duplicate, ultimately producing two cells of the same type

Differentiation. The replication of cells in growing bodies is followed by differentiation. Life in most species begins from a single fertilised egg of cell. The single cell becomes a double cell, then a quardruple and so on. At the same time different sets of genes work in different cells evolving specific physical traits, while specialised cells form different organs of the body, hands, legs, brain, heart etc. This process is known as *differentiation*.

Differentiation implies strictly regulated work. The cells concerned concentrate on the task in hand and cease all other activities and when the work is completed they stop working. This switching on and off of genetic activities is achieved by the presence of two molecules attached to the genes – *inducers* and *repressors*. (see *The New Biology* supra).

Heredity. The genes which we inherit from our parents determine our hereditary traits. Hereditary characteristics are not transmitted in a package, as it were. Different genes are responsible for different inherited traits. Each gene functions independently of other genes in this respect. The genes for a particular trait are found at the particular locations in the chromosomes.

Chromosomes are thread-like bodies found in the nucleus of the cell. They are always found in pairs. Chromosomes vary in number according to species. The fruitfly, for example, has 4 pairs or 8 chromosomes in all, and the garden pea has 7 pairs (14 in all). Mice have 20 (40) and humans 23 (46).

Our 46 chromosomes arranged in single file would measure more than 6 feet. Yet they are contained in the nucleus which is about forty-thousandths of an inch. The nucleus is filled with nucleic acids of two kinds *Ribo Nucleic Acid*, RNA and *Deoxyribo Nucleic Acid*, DNA. The DNA is concentrated in the chromosomes while RNA is seen concentrated in the nucleoli, both of which are in the nucleus.

Protein Synthesis. One of the primary functions of the cell is to manufacture proteins. The human body requires thousands of different proteins. All these are built from 20 amino acids. Each gene (or a distinct segment of the DNA strand) contains instructions for making a specific protein.

The instructions are coded into precise sequence of nucleotides. Just as we can change the meaning of a sentence by rearranging the words, the genes can spell an immense vocabulary of proteins using only the four nucleotides of the DNA – A, T, C, and G. All the A, T, C, and G in one set of human chromosomes (46 in number) can be put together in billions of different ways.

One geneticist, H. J. Muller, has estimated that the number of different ways of putting together all the As, Ts, Cs, and Gs would be the figure 256 followed by 2.4 billion zeros. This is a figure that boggles the imagination. It would be a lifetime job if any one sat down to write out that figure in full. Or, just try it.

RNA. In protein synthesis the DNA is assisted by the RNA (Ribo Nucleic Acid). RNA is a single strand as against the double strand of the DNA and is different in composition. That is to say, the RNA has *Uracil (U)* in the place of DNA's *Thymine (T)*. RNA is of two kinds, messenger RNA (mRNA) and transfer RNA (tRNA). When a protein is to be prepared the concerned gene opens. RNA (mRNA) nucleotides attach themselves to the gene and go on growing like a ribbon. This ribbon is the mRNA. It carries the code for making the specific protein.

Proceeding from the gene inside the nucleus the mRNA moves out into the cytoplasm looking for a ribosome for the assembly of the particular protein. The sequence of As, Us, Cs and Gs on the messenger RNA forms into groups of 3-letter words like *ACU, CGG, CCU* etc. These 3-letter words are called *codons*.

The message carried by the messenger RNA (mRNA) is transferred to the transfer RNA (tRNA). The ribosome with the assistance of the tRNA proceeds to collect the amino acids indicated in the message from the chemicals stored in the cytoplasm. Here, the amino acids are linked together in the sequence given in the code and the synthesis of that particular protein is completed.

Clones. Every cell is equipped with the material and the knowhow to build a full adult of the species. It is therefore possible to reproduce any organism if a living cell from any part of the organism is available. This was proved in the fifties by F. C. Steward of Cornell University. He placed tiny pieces from carrot slices in glass flasks containing nutritive solutions. He revolved the flasks slowly and released free cells from the carrot pieces. These free cells were left to grow by themselves. They grew into complete carrot plants. An English scientist J. B. Gurdon carried out another experiment with frog's eggs. He destroyed the nuclei in the eggs. The frog eggs were then filled with nuclei taken from a tadpole's intestinal tissues. The eggs developed into exact replicas of the donor tadpole. This opens up the possibility of cloning human beings themselves by the same process.

Cloning is asexual reproduction. A male and a female need not unite to produce an offspring. But in cloning, a cell from a male will only produce a male and vice versa. This handicap is compensated by the fact that the offspring would be an exact replica of the donor.

RE-COMBINANT DNA

As biologists learned more and more of the genetic code, they started investigations to see if the code can be permanently changed by manipulating the genes. All attempts in this regard have been collectively categorised as *Genetic Engineering*.

Genetic Engineering includes fusions, deletions, inversions and transpositions of genes. The most celebrated of all these attempts is the hybridisation of genes, that is grafting a piece of the DNA of one organism to the DNA of another. Research in this technique, briefly known as *Re-combinant DNA*, was facilitated by the discovery of the plasmids and of certain enzymes.

Pioneer attempts in this direction have been so successful that the technique has emerged as a commercial proposition. *Time* writes that this technique promises to be *"the technology of the 1980s just as plastics were in the 1940s, transistors in the 1950s, computers in the 1960s and micro-computers in the 1970s"*.

The technique involves micro-surgery. Precision tools for this surgery are provided by certain enzymes which Paul Berg calls molecular scalpels and sutures. One of these enzymes called Restriction Enzyme can cut

Ten Foot Tree From Leaf Cell

Scientists in Wisonsin, U.S., have grown a 10-foot poplar tree from a single leaf cell in an experiment described as the first of its kind from woody plants.

Genetic engineers have been able to clone herbacious plants – those without wood – in laboratories for years, but have never been able to reproduce a tree from the single cell of another tree.

Brent. H. McCown, Professor of Horticulture at the Univercity of Wisconsion, who has repeated the experiment dozens of times since growing the first tree last year, discovered a way to dissolve the poplar tree cell wall and flood it with the hormones and chemicals it needs.

In a related first, the researcher has introduced an herbicide-resistant gene into the new trees which makes them impervious to chemicals used to kill nearby weeds.

The journery from single cell to a 10-foot tree took about one year. He started by scraping a single cell from the leaf of a mature poplar, placing it on a glass surface and removing the cell wall with enzymes.

Next he flooded the open cell with hormones that caused it to divide. Within weeks, the dividing cell mass had become a "fuzzy blob", visible to the naked eye.

A few weeks later it had organised itself into a small shoot that he planted in his laboratory. The trees he has created from single cells grow at the same rate as those from seedlings.

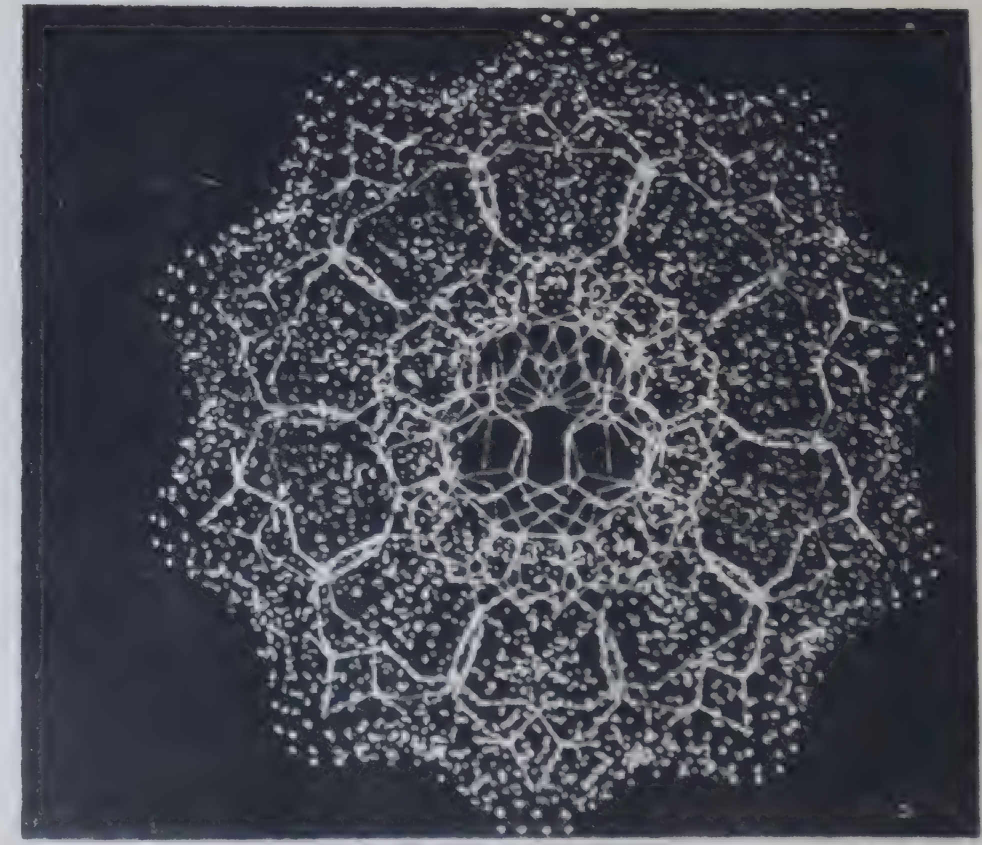
the DNA at any specific point required and graft it on to a foreign DNA. The sliced-out gene must have sticky ends shaped like mortises in order to anneal it firmly to the foreign DNA. This is also done by the Restriction Enzyme. Given these conditions it is possible to re-combine DNAs as diverse as those of a bacterium and an animal.

Grafting DNA. The first successful attempt at grafting a piece of DNA to a foreign DNA was made by Paul Berg of Stanford University. He took his initial supply of DNA from a well known laboratory organism ***SV 40*** (short for simian virus 40). Its genetic structure is fairly simple with about 7 genes in all, compared to the thousands of genes that crowd the cells of higher organisms. To insert this genetic material into a bacterium, Berg used as his carrier (vector) another variety of virus called the ***lamda phage***, which preys on bacteria.

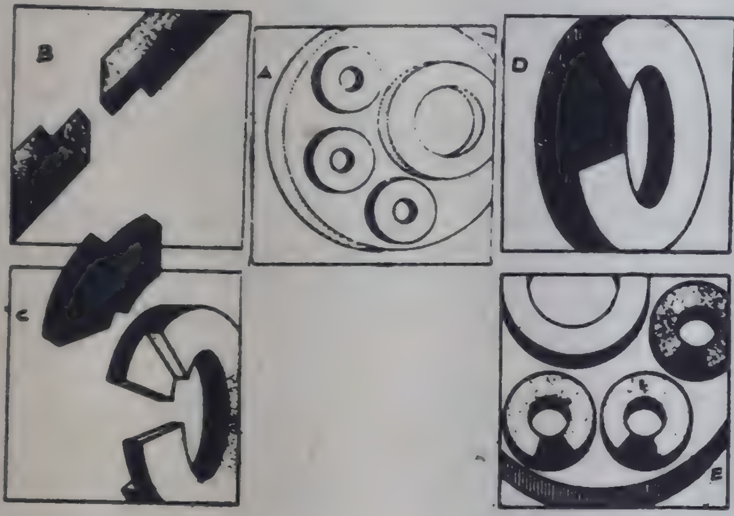
The first step in the operation was to cut out a slice of SV 40's DNA molecule. This was done by the use of Restriction Enzyme. As the enzyme cut the double-stranded DNA, it left one strand jutting out at both ends. These were sticky ends and were to be inserted into the foreign DNA which was similarly cleaved with one strand standing out at each end. When the cut ends were put together the single strands joined up to become double strands and the cleavage in the DNA ring was closed up. When this was done Berg had achieved a scientific first - combining the DNAs of two species of virus into a single DNA molecule (See ***Fig***). Berg shared the 1980 Nobel Prize for Chemistry for this achievement.

The process of re-combination is as follows: An E. coli bacterium is broken up by a detergent and the pieces are spun in a centrifuge to isolate the plasmids. The

A DNA Molecule: Cross Section



Re-combinant DNA Technique



(a) An E. coli bacterial cell, showing a chromosome and 3 plasmids. (b) A piece of DNA from a virus (foreign organisms) is sliced off. The severed ends of the foreign plasmid. (c) The sliced off foreign DNA (top) and the cut out bacterial plasmid. (d) The foreign DNA is glued to the bacterial plasmid and the cleavage closed. (e) The bacterial cell with its chromosome and the new hybrid plasmids.

plasmid is then immersed in a restriction enzyme which cleaves the plasmid at the specified place. The same enzyme is used to snip off a piece of DNA from a virus. The foreign gene (from the virus) is inserted into the cleavage of the bacterial plasmid and a re-combined molecule is formed. The new hybrid plasmid is then introduced into a bacterium. The bacterial cell divides and with it the plasmid also divides and multiplies (see ***Fig.***).

"Gene splicing," says Time, "is the most powerful and awesome skill acquired by man since the splitting of the atom. It is an unparalleled exploratory tool for examining and in the process changing, the complicated machinery of heredity. If a gene of unknown function is inserted into a bacterium, it can act as a probe that lets scientists see precisely what it does. By such techniques researchers will finally speed up the formidable task of identifying, locating and analysing every one of the more than 100,000 genes found in the human cell"

Scope of the Technique. The Recombinant DNA technique opens out many avenues of beneficial research. First comes the production of therapeutic proteins like interferon, insulin, hormones etc. Interferon is a powerful antiviral agent made by the human body. But its supply is very limited considering the demand. Its extraction from blood cells and other human tissues is costly too. A single injection of interferon costs as much as 150 dollars. If, however, bacteria can be programmed to produce it (as has been done by Weismann early in 1981) the supply of interferon would be plentiful and cheap, coming down to a maximum of 1 dollar per shot. The reason is that as a manufacturing unit bacteria are unrivalled......Mechanical assembly lines, however sophisticated, can never compete with them. Replicating every 20 minutes a single bacterium can produce millions of bacteria in 24 hours all of them turning out interferon in unbroken succession

The same is the case with insulin, growth hormones, vaccines etc. Already genetically engineered bacteria have emerged as suppliers of scarce drugs like *enzyme urokinase* used to dissolve blood clots and *betaendorphin*, one of brain's own pain killers. The human growth hormone used to treat dwarfism, formerly in short supply, is now being turned out by bacteria tailored to produce it.

The case of insulin is slightly different. Insulin was being extracted from the pancreases of cows and pigs. This wa enough supply. But it turned out that som people were allergic to animal insulin. Now bacteria specially programmed for th purpose are producing insulin which avoid allergies.

THE GENETIC CODE

The genetic code like all codes is complicated but once the formula is properly understood, it can be easily decoded. The blueprint of the code is contained in the genes. The genes are made up of DNA (Deoxyribo Nucleic Acid) molecules which, however, do not actively participate in the synthesis of proteins.

The DNA molecules merely issue coded instructions through Messenger RNA (Ribo Nucleic Acid) which passes on the code to Transfer RNA. It is the tRNA (Transfer RNA) working in conjunction with ribosomes that actually process the required proteins. Two groups namely, 4 RNA nucleotides and 20 amino acids participate in the production of proteins.

RNA Nucleotides

Adenine	A
Guanine	G
Cytosine	C
Uracil	U

Nucleotides. Nucleotides are made up of purine (adenine or guanine) and pyrimidine (cytosine, thymine or uracil) bases and are attached to a carbon sugar and phosphate strand. These are bonded together into a single unit – the nucleotide. The nucleotides of DNA and RNA are similar, except that uracil replaces thymine in the RNA. The nucleotides show a peculiar tendency, that is, A will combine only with T and vice versa while C will combine only with G and vice versa. In the RNA C combines with U instead of G as in the DNA.

Amino Acids. There are 20 different amino acids which are required in processing proteins. They are given below:

The 20 Amino Acids

Alanine	Ala
Arginine	Arg
Asparagine	Asn
Aspartic acid	Asp
Cysteine	Cys
Glutamine	Gl
Glutamic acid	Gl
Glycine	Gly
Histidine	His
Isoleucine	Ile
Leucine	Leu
Lysine	Lys
Methionine	Me
Phenylalanine	Phe
Proline	Pro
Serine	Ser
Threonine	Th
Tryptophan	Trp
Tyrosine	Ty
Valine	Va

Codons. How are the 4 RNA nucleotide (AGCU) and the 20 amino acids put togethe so as to form a code? If A, G, C and U ar treated as letters of a code only 4 amin acids will figure in the decoded version. Bu there are 20 amino acids and all of them hav to be provided for in the code. How can thi be done?

Strange though it seems, the solution to thi problem was first suggested by a physicist astronomer, George Gamov. He said that i three letters out of four are formed int triplets, 64 different code words can be spel out. These would accommodate all th twenty amino acids and more. In fact, th problem was how to account for the exces code words. Subsequent work by bio chemists proved the intrinsic validity of th solution, though it happened that some amin acids often got more than one code word signify them. The triplets thus formed came to be technically termed *Codons*. Sixty-one out of the 64 codons specify amino acids. In many cases, the same amino acid is represented by several different codons. Indeed, some amino acids have as many as 6 codons each, some get 4, some others 2 and only a couple or so get just one codon each. The remaining 3 codons (64–61) signify full stops to indicate that the making of the protein is completed.

The following codons and their corresponding amino acids may be considered illustrative. UUU=Phenylalanine, GUU=Valine, AUU=Asparagin, GAA=Glutamic acid, GAU=Asparatic acid, UUA=Leucine, UGU=Cysteine, GGU=Glutamin, AGU=Serine. All these acids linked together in the stipulated order form a specific protein.

The Code. The complete code carried by the RNA is depicted below in the form of a chart. Vertical columns (1) and (3) show the related nucleotides. Lateral column (2) shows the nucleotides at the top and the amino acids indicated by them below.

Key Chart

(1)	(2)				(3)	
	U	C	A	G		Remarks
	Phe	Ser	Tyr	Cys	U	Col 1.
	Phe	Ser	Tyr	Cys	C	read
U	Leu	Ser	Stop	Stop	A	vertically
	Leu	Ser	Stop	Trp	G	Col 2.
	Leu	Pro	His	Arg	U	read
	Leu	Pro	His	Arg	C	laterally
C	Leu	Pro	Gin	Arg	A	Col 3.
	Leu	Pro	Gin	Arg	G	read
	Ile	Thr	Asn	Ser	U	vertically
	Ile	Thr	Asn	Ser	C	
A	Ile	Thr	Lys	Arg	A	
	Met	Thr	Lys	Arg	G	
	Val	Ala	Asp	Gly	U	
	Val	Ala	Asp	Gly	C	
G	Val	Ala	Glu	Gly	A	
	Val	Ala	Glu	Gly	G	

Sample reading C (left); A (top) and G (right) code for Gin (glutamine).

Proteins. All proteins are long chains of amino acids linked together in the order prescribed by the code. They are tailor-made for specific purposes. The long chain of amino acids is always found curled up in the form of a ball. The curliness is critical. It identifies the protein. The bumps and clefts on the surface of the ball indicate its specific individuality just as the facial features of a man do.

The RNA bears special markers on its surface to show where the code for the protein begins and ends. These are why there are punctuatuion codons, which do not stand for any amino acid.

Decoding. The gene made up of DNA molecules is the custodian of the code. It transmits the code imprinted on the Messenger RNA (mRNA) which in turn transcribes the code on the Transfer RNA (tRNA). The RNA carries the identities of the amino acids which are to be put together in the coded order to form proteins. This important work is performed by the ribosome which decodes the RNA message, picks up the required amino acids in the stipulated order and makes the necessary protein. The process is indicated in the chart below.

The process shown in the table may be briefly described thus: The DNA code AAA transmitted as the RNA code UUU is translated to indicate the amino acid Phenylalanine and so on. A string of such amino acids forms the required protein.

Decoding Process

DNA Code	*G	AAA	CAA	TTA	CTT	CTA	AAT	ACA	CCA	TCA	**T
mRNA Transcription	C	UUU	GUU	AAU	GAA	GAU	UUA	UGU	GGU	AGU	A
Protein Translation		Phe	Val	Asn	Glu	Asp	Leu	Cys	Gly	Ser	

* C & G Signals for beginning the making of proteins.

** T & A Signals for stopping.

TEST TUBE BABIES

World's first Test Tube Baby, Louise Joy Brown, is eight years old now. Born to Lesley and Gilbert Brown of U.K. on July 25, 1978, the baby girl soon became the darling of millions, opening new hope for couples suffering from infertility around the world.

Birth of Louise was the successful culmination of the bold and painstaking experiments of Robert Edwards and Patrick Steptoe - a Scientist and Doctor team in close collaboration. Soon after, India announced the birth of another baby girl Durga, as a result of the world's first frozen embryo transfer under the supervision of Dr. Subhas Mukerjee of Calcutta. China reported the success of developing its first test-tube human embryo at the genetic engineering research department of Beijing Medical University on September 21, 1985.

World-wide. While the ethical debate continues, Medical world has been reporting test tube births world-wide, almost routinely and Treatment Clinics sprung up in many countries in the East and the West.

There have been many pairs of test tube twins and also test tube triplets. Louise Brown herself got a test tube baby sister, Natalie Jane, born in 1982.

The first test tube quadruplets were born in Australia in January 1984 and Belgium reported another one in July 1985.

Brussels, St. Peter Hospital said that three embryos had been implanted into the mother's womb in the hope that at least one would develop. But all the three succeeded and one even separated into twins.

In Melbourne Hospital, quadruplets, all boys, were born to a woman who had been trying for ten years to have a child. The boys were named Sam, Christopher, Ben and Brett.

No New Idea. Test tube babies or the production of babies in the laboratory is not a new idea. What is involved here is an artificial method of fertilisation. The ovum of a woman is taken out and is fertilised by the sperm of a male in a test tube. The fertilised ovum is then implanted into the womb of the woman, who supplied the ovum. The fertilised egg attaches itself to the womb and completes its period of gestation within the womb in the normal manner and is delivered in the normal course.

Here, there is very little interference with the natural process—the only difference being that the ovum is fertilised outside the womb (in a test tube) instead of in the fallopian tube of the woman concerned. Socially also, there is nothing reprehensible in this sort of reproduction, so long as the ovum is fertilised by the sperm of the husband.

Complications. Social, ethical or legal complications set in when the woman involved is unmarried or when the ovum is fertilised by the sperm of any male other than the husband of the woman. If the woman is unmarried there is the question of paternity or who the father is, and consequential problems.

Similar difficulties arise if the ovum of a woman is fertilised by the sperm of any man other than her husband. It may also happen that the ovum of one woman, fertilised by the sperm of an unknown male, is implanted in the womb of another woman who brings forth the child. This is an extreme case where there will be two mothers for the same child and may be two fathers.

In the case of an unmarried woman or a married woman whose ovum is fertilised by the sperm of any person other than her husband, the name of the donor of the sperm will not be revealed either to the woman herself or to any others. Similarly, the donor of the sperm will never know whose ovum he has fertilised. At least, this is one of the conditions the doctors insist upon, for obvious reasons. Legal complications apart, such revelations will be highly embarrassing to all concerned.

First Success. However, it was none of these difficulties which obstructed the production of test tube babies till 1978. The difficulty was that the fertilised ovum, even if planted in the womb of the same woman, will not stay there till the end of the gestation period. It will be thrown out, that is, miscarried.

The Scientist-Doctor team at Oldham, U.K., succeeded against these odds in 1978 and since then hundreds of babies have born of the 'in vitro fertilisation' – the scientific name for the technique. The term 'in vitro' means "in glass", but in America's Norfolk Clinic, fertilisation actually takes place in plastic.

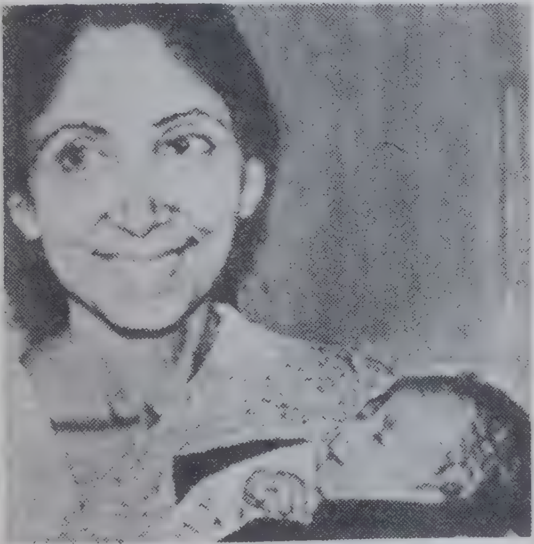
The husband's semen is dropped into the plastic culture dishes - not test tubes as in some countries - where the individual eggs have been incubating. Thus the process of inter-course between the woman's egg and male semen takes place in plastic dishes. Some couples later claim to possess these plastic dishes for sentimental reasons. Thereafter the process is very simple.

The Conception. Within 12 hours, the fertilised egg begins to rearrange itself. Though hundreds of sperm wriggle about an egg in a laboratory dish, only one sperm penetrates to fertilise the egg. The roundish bodies in the centre of the cell, called pronuclei, merge; the chromsomes from the mother and father thus completing the process of conception. The patients have a 20 per cent chance of getting pregnant during the four-week treatment about the same chance other women have during a month of male-female intercourse.

The growth: Two days later the single cell divides into two and then four and is ready to be transferred into the mother. Though all of them cannot penetrate, scores of sperm still cling stubbornly to the outer membrane. The expectant mothers are then advised to lie down undisturbed.

The test tube or plastic dish children, therefore, extract far more effort and expense from the parents and it is wrong to minimise affection or sentimental attachment with them. The whole gambit is to provide the remedy for damaged fallopian tube

Indira—India's First



Dr. Indira with Indira

India's first scientifically documented test-tube baby was born at the municipalised King Edward Memorial Hospital at Parel in Bombay at 15.45 hours on August 6, 1986.

The female child was born to Moni Chawda, 23. The indigenous fertilisation procedure was developed by Dr. Indira Hinduja and the first child was promptly named 'Indira'.

The baby was delivered by Ceasarian section.

This is the first wholly Indian test-tube baby whose birth from the in vitro fertilisation and embryo transfer (IVF ET) method has been documented in the country and accepted by the medical community. There was no documentation of the "test-tube" baby born in Calcutta in July 1978 while the fertilisation, conception and implantation of the test-tube baby born in Bangalore on June 14, 1986 was done in Cambridge.

Mrs. Chawda could not deliver a baby normally because one of her Fallopian tubes (which convey the egg from the ovaries to the uterus) had been removed in an earlier operation while the other was blocked.

(arteries) in a woman's body and/or invigorate the eggs with powerful male semen in case of husband's inherent weakness.

Surrogate Mother. There have been instances of parents hiring the services of other women to receive the embryos, bear them, grow them in their womb and deliver the baby. These mothers are called Surrogate Mothers. Commercial agencies are organising such mothers on fabulous fees.

These are inviting legal and ethical complications as well. Two wealthy parents died in an air-crash in Australia leaving test-tube embryos frozen in liquid nitrogen. Doctors faced the dilemma whether to throw the embryos out or implant them in a surrogate mother so that they can inherit their parents' fortune.

In France, a young widow went to court to establish her right to be impregnated with the sperm deep frozen by her husband shortly before his death.

Dilemma. A great dilemma facing the medical world is whether to permit destruction of excess embryos after impregnating a receiver or allow experimentation with them. One argument is that this is tantamount to destruction of human life. Groups like LIFE, the anti-abortion organization, argue that embryos are entitled to the protection due to any human being.

The legal question is whose child it would be if a surrogate mother leases her womb for nine months for another person. The resulting baby would have no genetic connection with the one who gave birth to the child, but as the law stands, the baby would be hers — illegitimately — and the real parents would have to adopt it.

FOOD & NUTRITION

Human diet is not restricted to any special category of food. Man can and does eat a variety of foods, of both plant and animal origin. Variety is, for him, the spice of life–more so in foods, than in anything else. This natural desire for variety is justified by the fact that no single food provides us with all the nutrients that we need.

Cereals, like rice or wheat which form the staple food of mankind, supply us only with a fraction of our nutritional requirements. We have to supplement cereals with other foods that provide plenty of fats and proteins and minor quantities of a number of vitamins and minerals. This means that the larger our diet sheet, the better our health will be. This will become evident, if we analyse what nutrients our foods contain and in what proportion.

The nutrients found in foodstuffs may broadly be classified as (1) Carbohydrates, (2) Fats, (3) Proteins, (4) Minerals, (5) Vitamins and (6) Water. Proteins, fats and carbohydrates are called Macro Nutrients.

Macro Nutrients. Proteins (from the Greek word *Proteios* meaning first) are the most versatile elements in the body. They are the chief substances of the cells of the body. They form important constituents of muscles and other tissues and vital fluids like blood. Enzymes, which assist in the digestion of food, and anti-bodies which are the body defences against infections are also mainly protein in nature.

The nutritive value of protein depends on the essential *amino acid* composition. Amino acids are the bricks with which tissue protein is built and replaced. There are some 20 amino acids commonly found in dietary proteins. Of these, 10 amino acids can be synthesised by the body itself, whether by mutual conversion among amino acids or from non-protein sources. But 10 amino acids cannot be so synthesised and have to be supplied through diet. These are called *essential amino acids*. Adults require 8 essential amino acids while children require 9 or 10.

Fat, like protein, is a necessary ingredient in diet and is of value to the body in a number of ways. It is a concentrated source of energy and supplies per unit weight more than double the energy furnished by either protein or carbohydrates. Some fats, especially vegetable oils, provide what are called *essential fatty acids*, linoleic and arachidonic acids, to the body.

Cholesterol. Fats that circulate in the blood are of many types – triglycerides, phospholipids etc. The quantity and quality of fat consumed affects the level of *cholesterol* in the blood. Some fats like groundnut oil, sesame oil or safflower oil which contain a high proportion of poly-unsaturated fatty acids do not increase blood cholesterol levels greatly. Others like coconut oil, butter, ghee and hydrogenated vegetable oils (vanaspati) contain high proportions of *saturated fatty acids*⋆ and greatly increase cholesterol levels. It is also found that consumption of smaller amounts of fat at different times causes less increase of cholesterol than a large amount of fat taken at a time.

Carbohydrates include every kind of starch and sugar. Grainfoods are largely composed of starch and foodstuffs like cane sugar and glucose are pure carbohydrates. They form the main source of energy for the body. Being a cheap source of energy, carbohydrates form the bulk of Indian diet.

Protein Value of Indian Foods

Foodstuffs	Biological value	Protein efficiency ratio
Rice	68	2.2
Wheat	65	1.5
Maize	59	1.2
Bengal gram	68	1.7
Red gram	57	1.5
Groundnut	55	1.7
Gingelly seeds	62	1.8
Egg	94	3.9
Milk	84	3.1
Meat	74	2.3
Fist	76	3.5

A balanced diet simply means a diet that will supply all the nutrients necessary for the growth and development of the body. In India, a balanced diet has become an imperative since most Indians consume foods that provide more carbohydrates and fats than proteins.

The table below gives the amounts of the various foods that will make up a balanced diet for the average Indian. The quantity of food varies according to age and the type of work.

Yeast From Banana Leaves

Japan's National Food Research Institute recently announced that it has discovered a new yeast, extracted from banana leaves, that is not affected by freezing.

The discoverer of new yeast, Mr. Yasuo Tanaka, said other yeasts weaken 25 per cent to 30 per cent after freezing at a temperature of 20° C or lower. The new yeast almost completely retains its fermenting power under such conditions, he said.

Commercial bakers commonly make bread dough at one factory and ship it frozen to bakeries, where it is thawed, moulded into loaves, allowed to ferment and baked.

In dough that is not frozen, fermentation usually takes place in two stages. Freezing kills much of the yeast, however, and the first stage of fermentation and some of the bread's flavour is sacrificed.

However, the new yeast ferments 70 per cent slower than that commonly used, he said, and is weak in sugar dough because of the difference in osmotic pressure.

Micro Nutrients. Vitamins and minerals comprise what are called micro nutrients as distinguished from proteins, fats and carbohydrates which are called macro nutrients.

Vitamins can be broadly divided into fat-soluble and water-soluble vitamins. Vitamin **A, D, E** and **K** are fat-soluble vitamins. Vitamin **C** and **B** (including Vitamins B_1, B_2 and other B-Group vitamins) are water-soluble.

The vitamins are necessary auxiliaries in metabolism⋆. They combine with specific

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⋆ Saturated means that the fat molecule contains all the hydrogen atoms that it can hold. Unsaturated and poly-unsaturated oils (mostly vegetable oils) have room in the molecules for additional hydrogen atoms.

⋆ Metabolism represents the chemical processes going on in living organisms. It involves two activities

i Catabolism, which reduces complex substances into simple ones, and releases energy, and

ii Anabolism, which comprises the building up of complex substances from simple ones. Metabolic reactions are mainly controlled by enzymes.

Composition of Balanced Diet

Foodstuffs	Vegetarian	Non-Vegetarian	Vegetarian		Non-Vegetarian	
	Amount	Gm	Calories	Protein (gm)	Calories	Protein (gm)
Cereals	325	325	1150	29	1150	29
Dal & Nuts	100	50	320	22	160	11
Milk	200 (ml.)	100 (ml.)	235	8	117	4
Root vegetables	150	150	145	2	145	2
Other vegetables	100	100	50	3	50	3
Leafy vegetables	100	100	"	"	"	"
Fruits	100	100	80	–	80	–
Egg	–	50 (1 no.)	–	–	85	6
Meat/Fish	–	100	–	–	195	18
Fat	50	50	450	–	450	–
Sugar/ Jaggery	30	30	120	–	120	–
Total			2550	64	2552	73

proteins, as parts of the various oxidative enzyme systems which are concerned with the breakdown of carbohydrates, proteins and fat in the body. Thus, they are intimately involved in the mechanism which releases energy, carbon dioxide and water as the end products of metabolism.

A large number of minerals is present in the body and performs a variety of functions. Minerals account for about 4 per cent of the body weight. Calcium and phosphorus form about three-fourths of the mineral elements. Five other minerals – potassium, sulphur, sodium, chlorine and magnesium – account for most of the rest. Many elements are present in such minute quantities that they are called *trace elements* or *micro-nutrients*.

Water. Water is a vital constituent of diet. An average man contains about 45 litres of water (70 per cent of the body weight). The cells contain 30 litres. Three litres are in the plasma of the blood, where the suspended cells make a total volume of blood upto 5 litres. The remaining 12 litres (45–33) fill the spaces between groups of cells. This is tissue fluid which bathes all the cells of the body.

Water is absolutely necessary for the digestion and absorption of the foods taken in. It is the great solvent and neutraliser in the body. It is the substance in which bodily chemical reactions take place. Water is the carrier or transporting medium for all nutrients and body substances. It regulates body temperature. It is the great purifying agent in the body and removes waste materials in the form of tears, perspiration, urine and faeces. Watery substances act as lubricants in the body, especially in the joints. It is a part of all body tissues and fluids.

Acidosis, alkalosis and dehydration, oedema fever, shock, uraemia and constipation are some of the clinical signs of inadequate salt and water in the body. *Sources:* The body obtains water mainly from the fluids we drink, from the solids we eat and also from the oxidation of energy foods. Fats and carbohydrates are oxidised in the body to carbon dioxide and water.

Nutrient Values. Cereals like rice, wheat and millets, ragi, cholam and bajra form the main food in India. Cereals are rich in carbohydrates. They generally contain 6 to 12 per cent protein, but these proteins are usually deficient in the essential amino acid *lysine*. Rice protein, however, is richer in *lysine* than other cereals.

Most cereal grains are poor in mineral content and rice is especially poor. Ragi is, however, rich in minerals, especially in calcium, and bajra in iron. Whole cereal grains are important sources of B-vitamins but in milling, rice loses the outer layers containing thiamine. Parboiled rice, even when milled, does not lose its thiamine content. Except yellow maize, which contains some amounts of carotene, no other cereal grain is a source of vitamin A or C.

Pulses or legumes as they are called, are rich in proteins. Pulse proteins, however, are of relatively low biological value because of the deficiency of the essential amino acid *methionine* but they are rich in *lysine*. Pulses are not rich sources of minerals but they are rich in B-vitamins. Dried pulses do not contain vitamin C but if they are germinated significant amounts of vitamin C are generated.

Leafy Vegetables. Most of the green leafy vegetables are rich sources of calcium, iron, carotene, vitamic C, riboflavin and folic acid.

Roots and tubers are rich in carbohydrates. But foods like carrot are also rich in carotene (Vitamin A); those like potato contain significant amounts of vitamin C, while foods like tapioca contain calcium also.

Other Vegetables are those which do not fall into the category of leafy vegetables or root vegetables. These vegetables are shoots, like lady's finger, cucumber, tomato, bitter gourd, snake gourd, brinjal, etc. They are fairly good sources of vitamins and minerals.

Nuts and oil seeds are good sources of fat (oil), protein and minerals and fair sources of vitamins: eg., groundnut and cashewnut.

Fruits in general are rich in vitamin C, particularly, gooseberry (amla), guava (perakka) and citrus fruits. Yellow fruits like mango and papaya contain carotene and dried fruits like dates are sources of iron.

Fish and sea foods are rich sources of protein, B-vitamins and also minerals, especially calcium.

Fleshy foods are rich sources of protein and B-vitamins, especially B_{12}. They are generally deficient in vitamin A, but liver is an exception.

Egg is a rich source of all nutrients except vitamin C. Its protein is of high quality.

Milk & milk products. Milk is an ideal food for infants and young children and a good supplementary food for all. It contains all vital nutrients, except vitamin C and iron.

Food & Energy. Food is the only source of energy for humans. This means that our dietary sheet must change according to our requirements of energy. "If food is to perform the functions in the body it is meant to, namely producing energy, providing materials for body building, and regulating body processes, meals must be planned.

Good food selection, the cornerstone of good nutrition, must be learned as unfortunately there is no automatic built-in mechanism in human beings to direct the choice of foods which build healthy bodies and which keep them running satisfactorily from day to day."

The question what food we should eat and how much, depends on the amount of energy we need. Food energy is measured in terms of heat units called calories. A physiological

Balanced Food

Acidity in the body tissues is one of the causes of many disorders like gastritis, ulcers, etc. It is, therefore, imperative that a proper balance between acid and alkaline foods is maintained in our diet. A healthy body usually has large alkaline reserves. A slightly over-alkaline diet is wholesome to the human body for optimum health and maximum resistance to diseases. According to experts the ideal relationship between acids and alkalines in the diet is 80 per cent alkaline producing foods and 20 per cent acid producing foods.

Some Common Foods - Their Potential Acidity And Alkalinity (per centage in an ounce):

Alkali-forming	
Figs	*30.0*
Soyabeans	*12.00*
Lima beans	*12.00*
Apricots	*9.5*
Spinach	*8.0*
Turnip or Beetroot	*8.0*
Raisins	*7.0*
Almonds	*3.6*
Carrots	*3.5*
Dates	*3.0*
Celery	*2.5*
Cucumber	*2.5*
Lettuce	*2.2*
Potatoes	*2.08*
Cabbage	*1.8*
Grapes	*1.0*
Tomatoes	*1.7*
Apples	*1.0*
Bannus	*1.0*
Water-melon	*1.0*
Coconut	*0.5*
Acid-Forming	
Oysters	*5.0*
Veal	*3.5*
Mostfish	*3.5*
Liver	*3.0*
Chicken	*3.0*
Most meats and fowl	*3.0*
Most grains	*3.0*
Rice	*2.5*
Mist nuts	*2.0*
Lenbils	*1.5*
Pea nuts	*1.0*

calorie, also called large calorie or kilocalorie (abbreviated as Kcal), is the amount of heat necessary to raise the temperature of one kilogram of water by one degree centigrade. One gram of protein or carbohydrates yields 4 calories. One gram of fat yields 9 calories while the same quantity of alcohol yields 7.

The following tables show the height-weight ratio of 1. Adults. and 2. Adolescents.

Adults: Height-Weight Ratio

MEN				WOMEN			
	Weight in Kg				Weight in Kg		
Height		Age		Height	Age		
cm	20	35	50	cm	20	35	40
148	42.7	47.6	50.9	148	38.6	44.0	47.1
153	45.4	50.4	53.5	150	40.3	44.8	47.7
158	48.6	53.5	56.3	153	41.9	46.6	49.5
163	51.1	56.3	59.4	155	42.8	47.7	50.1
168	54.0	60.1	63.7	158	44.9	49.5	52.1
173	58.1	64.0	68.3	160	46.0	50.6	53.0
178	61.9	68.5	72.4	163	47.3	52.1	54.9
183	66.0	73.3	77.8	165	49.1	54.1	57.3

Adolescents: Height-Weight Ratio

Boys			*Girls*	
Height (cm)	*Weight (kg)*	*Age (yrs)*	*Height (cm)*	*Weight (kg)*
112.4	19.2	5+	112.5	18.6
118.8	21.9	5+	117.8	20.5
123.2	24.3	7+	123.2	23.8
127.9	26.1	8+	127.2	26.0
133.3	29.2	9+	132.5	29.0
138.0	31.0	10+	138.2	32.6
142.7	34.0	11+	145.1	36.3
148.4	37.8	12+	151.5	42.5
155.0	42.4	13+	153.8	43.9
162.6	47.3	14+	154.5	45.0
165.5	51.1	15+	155.8	47.3
168.9	54.8	16+	155.8	49.0

LANDMARKS OF SCIENCE

Science, from the Latin *Scientia*, means learning or knowledge in its widest sense. In English, the word has a restricted application. It generally means physical and biological sciences.

Primitive science can hardly be called science. It was a hotch-potch of superstition, magic and rituals. Nevertheless, this hotch-potch contained elements that were destined to become the foundations of science.

Transition. At first, all natural phenomena—physical and biological—were interpreted as the operations of supernatural powers, which had to be worshipped, placated or appeased by magic rites and practices.

New Mineral

Geologists of the Siberian branch of the USSR Academy of Sciences have found a new mineral on the shores of lake Baikal. The mineral, which has been named "natalite", after Soviet geologist Natalaya Frolova, has grains of a bright green colour with tints of yellow.

The International Minerological Association has confirmed the discovery of the Siberian scientists.

This primitive conception was refined and developed by the old world philosophers from Aristotle (4th cen. B.C.) to Aquinas (13th cent. A.D.). These philosophers eliminated much of the superstitious dross that had accumulated, but they could not dissociate science from metaphysics or religion.

The Greek philosophers, Aristotle in particular, considered science and philosophy as one and the same. In the Middle Ages both science and philosophy had become bound up with theology. Aquinas, the greatest of the scholastic philosophers, regarded all the three subjects as parts of one grand system of philosophy.

Modern Science. It was left to Galileo to break up this misalliance and to strike out a new path for science—the path of experimental proof. This method initiated by Galileo was completed by Newton, and modern science was born. The essence of the new-method was an appeal to sheer facts for proof.

In India too, science grew up from religion. The scientific lore of the Indus Valley people must have been very large, judging from the high degree of civilization they had attained. But we know little or nothing about them. With the coming of the Aryans, we get our first glimpses of science in India.

Theories and Principles of major scientific breakthroughs are given below in chronological order. A stands for Author and T for Treatise. The letters A and/or T are shown only in places where the names of the author and the treatise are mentioned together or where there is a chance of mistaking one for the other.

Yajurveda (T), c. 1000 B.C., India—Numbers named up to 10^{12} (million-million)-decimal system, addition, subtraction, multiplication, division, fractions. *Astronomy*—the Nakshatra (stars and constellations) system. Enumeration of 27 or 28 *Nakshatras* headed by Krithika (Pleiades).

Taittiriyasamhita (T), 800-700 B.C., India—Progressive arithmetical series—odd and even numbers.

Panchavimsa Brahmana (T), 800-700 B.C., India—Geometrical progession.

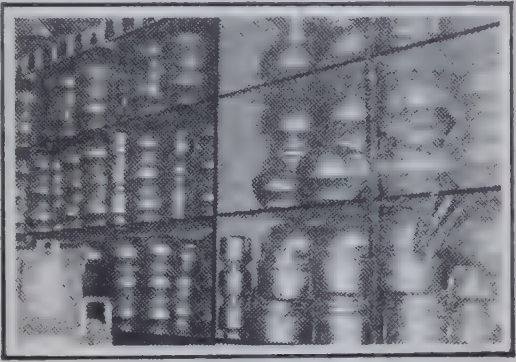
Satapatha Brahmana (T), 800-700 B.C., India—Summation of arithmetical and geometrical series.

Sulba Sutras (T), 700-600 B.C., India, Geometry—Rules for drawing perpendiculars, squares, isosceles, trapezium, etc. Combination and transformation of rectilineal figures.

Lagadha (A). Vedangajyotisa (T), 700-600 B.C., India, Astronomy.—Elaboration of calendrical science—summer and winter solstices. Rule for determining length of days between solstices.

Baudhayana (A), 600-500 B.C., India, Geometry—anticipation of the Pythagorean theorem-"The diagonal of a rectangle produces by itself both (the areas) produced separately by its two sides." Areas of triangles, parallelograms, trapezium, etc.

100 Years of Aluminium Industry



Centenaries are occasions to celebrate. But in the case of the aluminium industry, its 100th year finds the major units in the world caught in depression.

The celebrations to mark the centenary of the electrolytic process for smelting aluminium were cancelled in the U.S. In Europe, too, changes in top management in the major producer Alusuisse threw cold water on the celebrations while the French aluminium interests blamed the London metal exchange for depressing the price of the metal.

The French feel that the way out of the depression is to find other uses than the traditional ones for aluminium such as fashion wear. To make their point, a fashion show was organised in Paris to show the potential of aluminium as clothing material.

Models pirouetted in outfits called 'Alumina', 'Allusion', 'Toutenalu' and since the show was European, even 'Eclaminium'. Critics were however not impressed, as the inspiration instead of being haute couture seemed to be from space suits, tin soldiers and Christmas crackers.

Ductile and malleable, the silvery matalic element of Aluminium is obtained commercially by electrolysis of bauxite and cryolite.

Although it is the third most abundant element in the earth's crust (8.1% by weight) it was not isolated until 1825 by H.C. Oersted (177-1851). However industrial exploitation began only 100 years ago.

Volumes of prism, cylinder, etc. The concept of *Algebra*—quadratic equations.

Manava, 600-500 B.C., India—Fixing the value of the π to 5 decimal places at 3.16049.

Apastamba, 600-500 B.C., India—Square root and cube root.

Katyayana, 500-400 B.C., India—Indeterminate Equations.

Kautilya (A) Arthasastra (T), 400-300 B.C., India—Mining, metallurgy, etc. - incidental references.

Bhadrabahu (A) Kalpasutra (T), 300 B.C., India—Summation of geometrical series.

Euclid (A). Elements (T), 300 B.C., Greece—The first formal statement of geometrical principles.

Pingala (A). Chandah Sutra (T), 200 B.C., India—Permutations and combinations-meru prasta or Pascal's triangle.

Archimedes, d. 209 B.C. 200 B.C., Greece, Hydrostatics—the laws of floating bodies..

Aristarchus of Samos (A), c. 200 B.C., Greece—Observations and calculations regarding rotation of the Earth and revolution round the Sun.

Eratosthenes, c. 200 B.C., Greece—First measurement of the circumference of the Earth.

Chiu Chang Suan Shu (T), 2nd Cent. B.C., China Arithmetic—in nine sections—area of the segment of a circle.

Hipparchus, 2nd Cent. B.C., Greece—Measurement of the distances to the Sun and the Moon—precession of the equinoxes.

Claudius Ptolemy (A) Almagest (T) A.D. 140, Greece—A synthesis of the current system of astronomical knowledge in Europe—remained the Bible of European astronomers for a long time.

Suryasiddhanta (T), A.D. 400, India—The first important astronomical treatise in India—was continuously revised and updated by subsequent astronomers.

Rotation of Earth. Aryabhata (A) Aryabhatiya (T), A.D. 5th Cent., India, Astronomy— Theory of the rotation of the Earth, epicyclic theory of planetary motions. *Mathematics—the values of the π(3.1416) and sines—alphabetical system of expressing decimal place value notation—extraction of square and cube roots—indeterminate equations of the first order.*

Brahmagupta (A) Brahmasphuta Siddhanta and Khandakhadyaka (T), A.D. 6th Cent., India, Astronomy—mean planetary motions, true planetary motions, problems of time, space, distance, lunar and solar eclipses—risings and settings of planets, Moon's cusps and shadows—conjunctions of planets—*Mathematics*—systematic operations with zero.

Varahamihira (A). Pancha Siddhanta (T), A.D. 6th Cent., India—A survey of the development of astronomy and an exposition of astronomical theories. Other astronomical works by Varahamihira include *Brahat Samhita, Leghujataka* and *Yogayatra.*

Amarasimha (A). Amarakosha (T), A.D. 6th Cent., India—A lexicon—classification and synonyms of plants, animals, metals and minerals.

Bhaskara I (A). Mahabhaskariya (T), A.D. 7th Cent., India—Mean longitude of planets—Longitude connection–Time, place, direction, spherical trigonometry, latitudes and longitudes of junctions stars—True longitudes of planets, rising, setting and conjunction of planets, astronomical constants.

Muhammed Ibn Ibrahim (A). Sindhind and Arkand (T), A.D. 8th Cent., Middle East—Translations into Arabic of Brahmagupta's *Brahmasphuta Siddhanta (Sindhind)* and *Khandakhadyaka (Arkand).*

Jabir Ibn Hayyan (Geber), A.D. 8th Cent., Middle East—Treatise on alchemy.

Mahavira (A). Ganitasara Samgraha (T), A.D. 9th Cent., India—A comprehensive compilation in mathematics including geometry, solid mensuration, quadratic, biquadratic and cubic equations and permutations and combinations.

Al-Khwariszi (T), A.D. 9th Cent., Middle East—Theory of numbers in Arabic.

Zenith of Maths. Bhaskara II (A). Siddhanta Siromani (T), A.D. 9th Cent., India—Mathematical and astronomical work—Beginnings of integral and differential calculus—the zenith of ancient Indian mathematics.

Govinda Bhagat (A). Rasahrydaya (T),

A.D. 10th Cent., India—A treatise on alchemy.

Manjula (T), A.D. 10th Cent., India—Astronomical treatise—precession of equinoxes.

Al Hasan, A.D. 11th Cent., Middle East—Arab physicist—Magnification and Refraction of light.

Somadeva (A). Manasollasa (T), 12th Cent., India—Alchemy.

Gangadhara (A). Gandhasara (T), 12th Cent., India—A treatise on cosmetics.

Rasarnava (T). Rasaratnakara (T), 13th Cent., India—Treatises on alchemy.

Leonardo of Pisa (A). Liber Abaci (T), 13th Cent., Italy—An exposition in Latin of Arabic arithmetic including decimal place value numeration, zero etc. This was the main source through which Indian numerals penetrated Europe.

Rasapradipa (T), 16th Cent., India—A treatise on alchemy—one of the many treatises on alchemy prevalent in India.

Modern Astronomy. *Nicolas Copernicus, 1543, Poland, Astronomy*—Foundation of modern astronomy—heliocentric structure of the solar system.

Georg Bauer (Agricola) (A). De Re Metalica (T), 1556, Germany—Establishment of the Science of Minerals.

Gerhard Kremer, 1559, Netherlands—Cylindrical Projection Map (Mercator's Projection) – Establishment of the Science of *Cartography* (map making).

Galileo Galilei, 1589–92, Italy – Discovery of the laws of motion – Science of *Dynamics*.

William Gilbert (A). De Magnete (T), 1600, U.K.—'The Earth itself is a great magnet'—the basis of *Magnetism* and *Electricity*.

Johannes Kepler, 1609–19, Germany—The three fundamental laws of planetary motion.

John Napier, 1614, U.K., Logarithms—a new method of arithmetical calculations.

Rene Descartes, 1619, France—Formulation of *Analytical Geometry*.

Francis Bacon (A). Novum Organum (T), 1620, U.K.—First formal exposition of *Inductive Logic*.

Robert Boyle, 1661, U.K.—Distinction between chemical elements and chemical compounds; the Science of *Chemistry*.

Wall T.V.

Hitachi Ltd., a major electronics maker, has developed a television prototype that is so thin it can hang on the wall like a picture. Not yet scheduled for commercial production, the television uses a plasma display that provides a very high-quality colour picture.

The new 8-inch diagonal television is 12 cm. by 16 cm. and only 8 mm. thick.

The plasma in a plasma display are charged particles that are good conductors of electricity. Using ultraviolet rays emitted from a discharge lamp, about 20,000 plasma cells painted with fluorescent materials are installed in the display screen, creating very high-quality colours.

So far, electronics makers Citizen Watch, Casio and Seiko Epson are developing hanging televisions that use liquid crystal displays (L.CDs). Japanese companies currently have succeeded only in the marketing of pocket-size LCD television sets.

Hitachi says that its new display system will make it possible to develop a 40-inch diagonal television that does not require much electric power. The company says that a 40-inch television using plasma display needs about 300 watts of electricity, which is about the same amount of power that is consumed by a conventional television with the same size screen that uses a cathode-ray picture tube.

Robert Hooke, 1665, U.K.—Hooke's law.

Isaac Newton, c. 1670, U.K.—Discovery of *Calculus*.

Gottfried Leibnitz, 1675-76, Germany—Discovery of *Calculus*.

Olaus Romer, 1676, Denmark—Measurement of the velocity of light.

Leeuwenhoek, 1676, Netherlands—looks into the microscopic world and describes bacteria.

Laws of Gravitation. *Isaac Newton, 1687, U.K.*—Laws of gravitation and Univer sal laws of motion.

Christian Huygens, 1690, Netherlands—The wave theory of light.

Stephen Gray, 1729, U.K.—Electrical conductors and non-conductors – Insulation.

Joseph Black, 1728–1769, U.K.—Theory of specific heat.

Carolus Linneaus (Karl von Linne) (A). Systema Naturae (T), 1735, Sweden—Foundation of the Science of *Taxonomy—Divisions of the plant kingdom.*

Charles Augustine Coulomb, 1736–1806, France—Law of attraction and repulsion of electric charges.

William Herschel, 1738–1822, U.K.—Identification of infrared rays.

Antoine Lavoisier, 1743-1794, France—Founding of *Organic Chemistry.*

C. F. Du Fay, 1753, France – Fundamental law of electric charges – positive and negative.

Johann Ritter, 1776–1810, Germany—Identification of ultraviolet rays.

Karl F. Gauss, 1792, Germany—Conception of non-Euclidean geometry.

James Hutton (A), 1795, U.K.—Theory of the Earth (T). Founding of the Science of *Geology.*

Joseph Proust (A), 1799, France—The law of definite proportions of elements by weight in chemical compounds.

Karl F. Gauss, 1801, Germany – Mathematician and Physicist – the unit of electromagnetic induction is named after him.

Doppler Effect. *Christian Doppler (A), 1803–1853 Austria—Doppler effect.*

John Dalton, 1808–1827, U.K.—Modern chemical atomic theory.

Avogadro, 1811, Italy—Molecular hypothesis

Andre Marie Ampere (A), 1814, France—Laws of electromagnetic forces.

William Wollasten & Von Fraunhofer, 1814. Germany—Discovery of dark lines in solar spectrum.

Anders Angstrom (A), 1814–1874, Sweden – Angstrom unit (ten billionth of a metre).

William Smith (A), 1815, U.K. – Stratigraphic geology for dating geological formations.

Christian Oersted (A), 1820, Denmark – Discovery of electromagnetism.

Von Helmholtz (A), 1821–1894, Germany—Formulation of the law of conservation of energy—the first law of thermodynamics.

Nikolai Lobachevsky (A), 1825–26, Russia—Formulation of non-Euclidean geometry.

Janos Bolyai (A), 1825-26, Hungary—Formulation of non-Euclidean geometry.

George S. Ohm (A), 1827, Germany—Statement of the law of electric conduction (Ohm's Law).

Friedrich Wohler (A), 1828, Germany—Synthesis of an organic compound from inorganic matter.

Michael Faraday (A), 1830–31, U.K.—Discovery of electromagnetic induction.

Julius R. Von Mayer, 1840, Germany—The law of conservation of energy—First law of thermodynamics.

Schonbein, 1840, Germany—Identification of Ozone.

Rudolf Clausius, 1850, Germany—The concept of entropy—Second law of thermodynamics.

Edward Frankland, 1852, U.K.—Concept of chemical valency.

Michael Faraday, 1852, U.K.—Electrolysis.

George Boole (A), 1854, U.K.—Invention of Boolean algebra—the mathematization of logic.

Oceanography. *Mathew F. Maury, 1855, U.S.*—Founding of the science of Oceanography.

Von Bunsen and Gustav Kirchoff (A), 1855 Germany—Spectrography to identify chemical elements by their spectra.

Charles Darwin (A), 1858–59, U.K.—Origin of Species (T).

A. R. Wallace (A), 1858–59, U.K. – The Theory of Evolution—Natural Selection.

Frederich Kekule (A), 1861, Germany—Establishment of organic chemistry as the chemistry of carbon compounds.

James Maxwell (A), 1864, U.K.—The mathematical theory of electromagnetic induction.

Gregor Mendel (A), 1865, Austria—Formulation of the laws of *Genetics* (heredity).

Dimitri Mendeleeff (A), 1869, Russia—A periodic law and periodic table of elements.

Georg Cantor (A), 1884, Germany Mathematics—Development of set theory, the basis of modern mathematics.

Svante Arrhenius (A), 1884, Sweden—Concept of ionisation of solutions.

Heinrich Hertz (A), 1887, Germany—Electro magnetic waves called Hertz waves or radio waves.

William Roentgen (A), 1895, Germany—Short wave length ray (X-ray).

Antoine Becquerel (A), 1896, France—Discovery of radio activity in uranium.

Joseph Thomson (A), 1897, U.K.—Discovery of the electron.

Sigmund Freud 1900, Austria—Founding of the Science of Psychoanalysis.

Quantum Theory. *Max Planck (A), 1900, Germany*—The quantum theory.

Ernest Rutherford (A), 1903, U.K.—Nature of radio active disintegration—emission of Alpha, Beta and Gamma rays.

K. E. Tsiolkovosky (A), 1903, Russia—Formulation of the fundamental principle of rocket flights.

Binet & Simon, 1905, France—Intelligence Tests.

Albert Einstein, 1905–16 American—General and special theories of relativity.

Sockie, 1910, (W.. Germany) Switzerland—Identification of Cosmic rays.

H. Kammerlingh-Onnes, 1911, Holland—Discovery of Superconductivity.

Soddy, 1912, U.K.—Theory of Isotopes.

Niels H.D. Bohr, 1913, Denmark—Formulation of the concept of the planetary atom.

Henry G. L. Mosly, 1913, U.K.—Establishment of the concept of atomic number.

Bertrand A. Russel, Alfred North Whitehead, 1913, U.K.—Completion of *Principia Mathematica* (T), a major contribution to symbolic logic.

Rutherford, 1919, U.K.—Splitting the atom.

Whitehead (England), Louis V. de Broglie (France) and Erwin Schroedinger (Germany), 1924-26—Formulation of wave mechanics in atomic theory.

Werner Heisenberg, 1925, Germany—Formulation of quantum mechanics in atomic theory.

Reflex Theory. *Ivan Petrovich Pavlov, 1926, Russia, Biology*—Conditioned reflexes.

Wolfgang Pauli, 1931, Germany—Postulation of existence of the neutrino—almost a quarter century before it was directly observed (1955).

James Chadwick, 1932, U.K.—Discovery of the neutron.

Carl D. Anderson, 1932, America—Discovery of the positron.

Murphy, 1934, America—Deuterium (heavy hydrogen). Enrico Fermi (b. Italy). Neutron bombardment of uranium, leading to the production of transuranium elements.

Lise Meitner (Austrian Swedish), Otto Hahn (German), and Fritz Strassmann (German), 1938—First nuclear fission of uranium.

J. Robert Oppenheimer and others, 1945, America—Explosion of first atomic bomb.

Willard F. Libby, 1947, America—Development of atomic time clock—a method for determining geological age, by measuring the amount of radio active carbon-14 in an organic or carbon-containing object.

John Bardeen Walter H. Brattain and William Shockley, 1948, America—Formulation of theory of the transistor and its construction.

Atomic Energy Commission, 1951, America—Explosion of first nuclear fusion (hydrogen) bomb.

Charles H. Townes, 1954, America—Construction of first Maser.

Emilio G. Segre, American (b. Italy). Owen Chamberlain (American), 1955 America—Production and detection of the sub-atomic particles, the antiproton.

Laser. *Gordon Gold, 1957, America*—Construction of the first Laser.

USSR Academy of Science, 1957, Russia—First man-made satellite Sputnik put

Einstein's Last Dream

From the earliest times, man's dream has been to comprehend the complexity of nature in terms of as few unifying concepts as possible. In this context, in the history of physics, three names stand together; those of Newton. Maxwell and Einstein, as among the greatest synthesisers and unifiers of all time. Newton, some three hundred years ago, identified and unified terrestrial gravity (the force which makes apples fall) with celestial gravity (the force which keeps planets in orbit around the Sun). Maxwell, two hundred years later, unified the forces of electricity and magnetism. He further showed that light was one manifestation of this unification. Einstein, in 1905, unified the concepts of space and time. Eleven years later, he could show that Newton's gravity was a manifestation of this audacious unification in the sense that Newtonian gravity signified a curvature of the united space-time manifold. The question which Einstein then asked was this: Could Maxwell's electromagnetism be united with Newtonian gravity in the same way that Maxwell had united electricity and magnetism? If so, was Maxwell's electromagnetism also a manifestation of some other geometrical property of the space-time manifold just as Newtonian gravity was a manifestation of its curvature? This was Einstein's last dream. The researches of Abdus Salam and others lead us to believe that weak and strong forces can be combined with the forces of electromagnetism and gravity to form one unified force.

into orbit around the Earth.

James A. Van Allen, 1958, America—Discovery of belts of high energy radiation surrounding the Earth.

Francis H. C. Crick (Britain), James D. Watson (America) and Maurice H. F. Wilkins (Britain), 1962—Discovery of the structure of the DNA.

Thomas A. Mathews and Allen R. Sandage, 1963, America—Discovery of quasars.

David Harker and others, 1967, America—Deciphering the structure of Ribonucleic Acid (RNA).

R. Bruce Merrifield and others, 1968, America—Synthesizing of ribonucleic molecule.

Antony Hewish (Cambridge), 1968, U.K.—Identification of Pulsars.

Har Gobind Khorana, 1970, America—makes the first synthetic gene, a duplicate of a gene found in yeast cell.

H. Temin, 1971, U.S.—Discovery of reverse transcriptase for synthesizing DNA from RNA.

The Skylab. *National Aeronautical and Space Administration (NASA), 1973, US—The first orbiting laboratory—the Skylab.*

Sam Ting and others, Burt Richter and others, 1974, U.S.—Detection of pai particles.

H. G. Khorana (M.I.T.), 1976, U.S.—replicates a bacterial gene and plants it in a living cell, where, it started working. A working model of a synthetic gene.

Leon Lederman and others, 1976, U.S.—Discovery of particle with charm–confirmation of the concept.

G. S. Hurst and others, 1977, U.S.—Detection of single atoms.

P. Chambou and others, 1978, France—Discovery that large portions of the DNA of eukaryotic cells have no apparent function.

Supreme Court of U.S.A., 1980, U.S.—decides in favour of granting the first patent for inventing a life-form (a bacterium in this case) to Ananda Chakarborty.

NASA, 1981, U.S.—Maiden voyage of the reusable Space Shuttle.

Nippon Electric Company, 1982, Japan—Development of a "read-only memory" (ROM) computer microchip with the capacity of storing one million bits of memory.

P. Armbruster and G. Muncenberg, 1982, W. Germany—Creation of Element 109, the heaviest so far.

NASA, 1983, U.S.—Pioneer 10, launched in 1972, becomes the first man-made object to leave the solar system.

INVENTIONS

Scientific inventions and discoveries are important because they lead to the creation of mechanisms and artifacts which improve or easen our living conditions. However, there is often a long time lag before the inventions are transformed into working utilities.

Reviewing some 46 discoveries between 1900 and 1950, *A History of Technology*† points out that longest intervals – 50 to 80 years – were taken up by the flourescent lamp and the cotton picker and the shortest – one year – by Freon refrigants.

Inventions and discoveries come about sometimes by accident but mostly by design. Roentgen discovered X-ray by accident in 1895 but the Curies laboriously pursued the radium and discovered it eventually in 1898. Most of the discoveries in the 20th century were the results of purposeful investigations and experiments, though some like penicillin were discovered accidentally.

Accidental discoveries are, in fact, few and far between but even then only a scientist of unusual acumen can identify it as a discovery in the first instance. Others might have noticed the same thing before to no purpose. The classic instance is the Archimedes Principle. Thousands of people would have noticed that when they get into a full tub some water flows out. But Archimedes, alone among the thousands, could see a principle in it.

Many inventions have been made under the compulsive necessities of war. The Nazis developed rocketry and ballistic missiles to destroy England. America made the atom bomb to crush Japan. The Allies developed Radar and Sonar to protect themselves.

All these inventions have turned out to be quite beneficial in peacetime. Rocketry and missiles opened the way for space exploration and the epochal landing of men on the Moon. Atomic power is now being harnessed for peace-time uses. Radar and Sonar have been helpful in a number of ways. Sonar, for instance, has made commercial fisheries safer and more productive.

Invention	*Date*	*Inventor*	*Country*
Adding Machine	1623	Wilhelm Schickard	Germany
Aeroplane	1903	Orville & Wilbur Wright	U.S.A.
Airship (non-rigid)	1852	Henri Giffard	France
,, (rigid)	1900	G. F. von Zeppelin	Germany
Bakelite	1907	Leo H. Baekeland	Belgium

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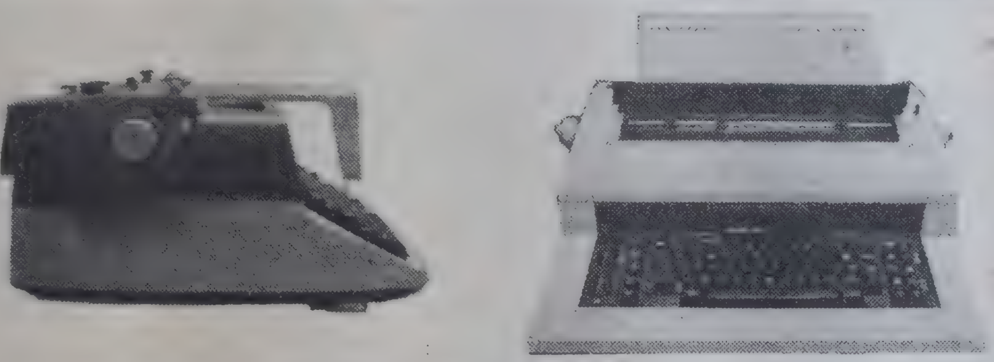
† A History of Technology. Ed. Trevor I. William.

Balloon	1783	Jacques & Joseph Montgolfier	France
Ball-Point Pen	1888	John J. Loud	U.S.A.
Barometer	1644	Evangelista Torricelli	Italy
Battery (Electric)	1800	Alessandro Volta	Italy
Bicycle	1839-40	Kirkpatrick Macmillan	Britain
Bicycle Tyres (pneumatic)	1888	John Boyd Dunlop	Britain
Bifocal Lens	1780	Benjamin Franklin	U.S.A.
Bunsen Burner	1855	R. Willhelm von Bunsen	Germany
Burglar Alarm	1858	Edwin T. Holmes	U.S.A.
Car (steam)	c. 1769	Nicolas Cugnot	France
,, (Petrol)	1888	Karl Benz	Germany
Carburettor	1876	Gottlieb Daimler	Germany
Carpet Sweeper	1876	Melville R. Bissell	U.S.A.
Cash Register	1879	James Ritty	U.S.A.
Cellophane	1908	Dr. J. Brandenberger	Switzerland
Celluloid	1861	Alexander Parkes	Britain
Cement (Portland)	1824	Joseph Aspdin	Britain
Chronometer	1735	John Harrison	Britain
Cinema	1895	Nicolas & Jean Lumiere	France
Clock (mechanical)	1725	I-Hsing & Liang Ling-Tsan	China
,, (Pendulum)	1656	Christian Huygens	Netherlands
Copper working	c. 4500 B.C.	Earliest smelting site	
Dental Plate	1817	Anthony A. Plantson	U.S.A.
,, (Rubber)	1855	Charles Goodyear	U.S.A.
Diesel Engine	1895	Rudolf Diesel	Germany
Disc Brake	1902	Dr. F. Lanchester	Britain
Dynamo	1832	Hypolite Pixii	France
Electric Blanket	1883	Exhibited Vienna Exhibition	
Electric Flat Iron	1882	H. W. Seeley	U.S.A.
Electric Lamp	1879	Thomas Alva Edison	U.S.A.
Electric Motor (DC)	1873	Zenobe Gramme	Belgium
,, (AC)	1888	Nikola Tesla	U.S.A.
Electro-Magnet	1824	William Sturgeon	Britain
Electronic Computer	1824	Dr. Alan M. Turing	Britain
Film (moving outlines)	1885	Louis Prince	France
,, (talking)	1922	J. Engl, J. Mussolle & H. Vogt	Germany
,, (musical sound)	1923	Dr. Lee de Forest	U.S.A.
Fountain Pen	1884	Lewis E. Waterman	U.S.A.
Galvanometer	1834	Andre-Marie Ampere	France
Gas Lighting	1792	William Murdock	Britain
Glass (stained)	c. 1080	Augsburg	Germany
Glassware	c. 1500 B.C.		Egypt and Mesopotamia
Glider	1853	Sir George Cayley	Britain
Gramophone	1878	Thomas Alva Edison	U.S.A.
Gyro-compass	1911	Elmer A. Sperry	U.S.A.
Helicopter	1924	Etienne Oehmichen	France
Hovercraft	1955	C. S. Cockerell	Britain
Iron Working (Carburized)	c. 1200 B.C.		Cyprus & N. Palestine
Jet Engine	1937	Sir Frank Whittle	Britain
Laser	1960	Dr. Charles H. Townes	U.S.A.
Launderette	1934	J. F. Cantrell	U.S.A.
Lift (Mechanical)	1852	Elisha G. Otis	U.S.A.
Lightning Conductor	1752	Benjamin Franklin	U.S.A.
Linoleum	1860	Frederick Walton	Britain

Age of Wheelwriters



Type writer: two generations

The integrated circuit technology, commonly called the silicon chip, has revolutionised the disign of typerwriters.

An international concern has perfected the designs of typewriters in which microprocessors are incorported. These new devices, called ***quietwriters and wheelwriters*** *expected to type fast large amounts of textual matter and effect a large economy in time, material and man-power.*

In an ordinary typewriter, the alphabet and symbols are arranged in a semicircular array of levers. In the electronic typewriters, the characters are on a wheel which is fixed.

In the new design, the characters are arranged along the spokes of a wheel over the paper over which typing is to be made. Another motor spins the wheel so that the right spoke position is placed over the paper corresponding to the key pressed.

Two other motors control the height of the typing ribbon and its feed rate. Because of the silicon chip technology, the entire equipment is compact and occupies the space of a small box.

One common difference between the printed and typed texts is the clearly visible closed packing of letters in a word in the printed version. For example, both thin letters like I or J and wide letters like W or M occupy exactly same space in the typed text. This defect has been removed in the new design, because the motors that control the movement of the ribbon and paper take instructions from the silicon chip incorporated in the design. Thus the output is indistinguishable from the printed matter.

In an ordinary typewriter, the force with which a letter is pressed on the paper depends on the force applied by the finger on the key. In electric and electronic typerwriters, a uniform force is applied on the paper, irrespective of the force applied by the finger on the key.

But in the new design, there is a graded application of pressure with a view to presenting a pleasing output. For example, a comma will be brought out lightly compared to other letters of the alphabet. If desired, letters can be typed with sufficient force so as to offer a good profile to attract the attention of readers.

The design has a memory of about 7000 common words and even if a typist makes a mistake in spelling, it gets automatically corrected by a comparison with the memory-stored spelling.

More words can be added as desired by the user to the spelling-checker. Other facilities like recall of oft-repeated passages now available in word-processors are also incorporated in the new design.

A valuable accessory to this new typewriter is a printer converter. This enables the typed version to be brought out in printed form so that it can be reproduced by off-set printing processes. Thus publishing houses will be rid of the botheration of composing the typed version for final printing.

Locomotive	1804	Richard Trevithick	Britain
Loom, power	1785	E. Cartwright	Britain
Loudspeaker	1900	Horace Short	Britain
Machine Gun	1718	James Puckle	Britain
Maps	c. 3800 B.C.	Sumerian (clay tablets of river Euphrates)	
Margarine	1869	Hippolyte M. Mouries	France
Match, safety	1826	John Walker	Britain
Microphone	1876	Alexander Graham Bell	U.S.A.
Micro-processor	1971	Robert Noyce & Gordon Moore	U.S.A.
Microscope	1590	Z. Janssen	Netherlands
Motor Cycle	1885	G. Daimler of Cannstatt	Germany
Neon Lamp	1910	Georges Claude	France
Night Club	1843	Paris	France
Nylon	1937	Dr. Wallace H. Carothers	U.S.A.
Paper	A.D. 105	M. based fibre	China
Parachute	1797	A. J. Garnerin	France
Parchment	c. 1300 B.C.		Egypt
Parking Meter	1935	Carlton C. Magee	U.S.A.
Pasteurization	1867	Louis Pasteur	France
Photography (on metal)	1826	J. N. Niepce	France
,, (on paper)	1835	W. H. Fox Talbot	Britain
,, (on film)	1888	John Carbutt	U.S.A.
Porcelain	851	Earliest report from China	
Potter's Wheel	c. 6500 B.C.	Asia Minor	
Printing Press	c. 1455	Johann Gutenberg	Germany
Printing (rotary)	1846	Richard Hoe	U.S.A.
Propeller (ship)	1837	Francis Smith	Britain
Pyramid	c. 2685 B.C.		Egypt
Radar	1922	A. H. Taylor & Leo C. Young	U.S.A.
Radio Telegraphy	1864	Dr. Mahlon Loomis	U.S.A.
,, (Transatlantic)	1901	G. Marconi	Italy
Rayon	1883	Sir Joseph Swan	Britain
Razor (electric)	1931	Col. Jacob Schick	U.S.A.
,, (safety)	1895	King C. Gillette	U.S.A.
Record (long-playing)	1948	Dr. Peter Goldmark	U.S.A.
Refrigerator	1850	James Harrison & Alexander Catlin	U.S.A.
Rubber (latex foam)	1928	Dunlop Rubber Co.	Britain
,, (tyres)	1846	Thomas Hancock	Britain
,, (vulcanised)	1841	Charles Goodyear	U.S.A.
,, (waterproof)	1823	Charles Macintosh	Britain
Rubik Cube	1975	Prof. Erno Rubik	Hungary
Safety Pin	1849	Walter Hunt	U.S.A.
Scotch Tape	1930	Richard Drew	U.S.A.
Self-starter	1911	Charles F. Kettering	U.S.A.
Sewing Machine	1829	Barthelemy Thimmonnier	France
Ship (sea-going)	c. 7250 B.C.	Grecian ships	
,, (steam)	1775	J. C. Perier	France
,, (turbine)	1894	Hon. Sir C. Parsons	Britain
Silk Manufacture	c. 50 B.C.	Reeling machines devised	China
Skyscraper	1882	W. Le Baron Jenny	U.S.A.
Slide Rule	1621	William Oughtred	Britain
Spectacles (convex)	1289	Venice	Italy

Spinning Frame	1769	Sir Richard Arkwright	Britain
Spinning Jenny	1764	James Hargreaves	Britain
Spinning Mule	1779	Samuel Crompton	Britain
Steam Engine	1698	Thomas Savery	Britain
Steam Engine (piston)	1712	Thomas Newcomen	Britain
Steam Engine (condenser)	1765	James Watt	Britain
Steel Production	1855	Henry Bessemer	Britain
Steel (stainless)	1913	Harry Brearley	Britain
Submarine	1776	David Bushnell	U.S.A.
Tank	1914	Sir Ernest Swington	Britain
Telegraph	1787	M. Lammond	France
Telegraph Code	1837	Samuel F. B. Morse	U.S.A.
Telephone	1849	Antonio Meucci	Italy
„	1876	Alexander Graham Bell	U.S.A.
Telescope	1608	Hans Lippershey	Netherlands
Television (mechanical)	1926	John Logie Baird	Britain
„ (electronic)	1927	P. T. Farnsworth	U.S.A.
Terylene	1941	J. R. Whinfield, J. T. Dickson	Britain
Thermometer	1593	Galileo Galilei	Italy
Transformer	1831	Michael Faraday	Britain
Transistor	1948	Bardeen, Shockley & Brattain	U.S.A.
Typewriter	1808	Pellegrine Tarri	Italy
Washing Machine (elec.)	1907	Hurley Machine Co.	U.S.A.
Watch	1462	Bartholomew Manfredi	Italy
Water Closet	1589	Designed by J. Harrington	Britain
Welder (electric)	1877	Elisha Thomson	U.S.A.
Wheel	c. 3300 B.C.	Sumerian civilization	
Windmill	c. 600	Persian corn grinding	
Writing	c. 3500 B.C.	Sumerian civilization	
X-ray	1895	Wilhelm K. Roentgen	Germany
Zip Fastener	1891	W. L. Judson	U.S.A.

(Source: **Guinness Book of Answers**)

ELEMENTS

An element may be defined as "a substance which cannot be broken down to yield simpler substances by ordinary chemical methods". The elements are the basic substances from which all others are built up by chemical combinations.

Elements found in nature or naturally occurring elements number 92, ranging from Hydrogen, the lightest element (Element 1) to Uranium, (Element 92) the heaviest element. One element plutonium (Element 94) has been found in minute quantities in the ores of Uranium and Thorium.

All elements heavier than Uranium are man-made and are called *Transuranics*. They are produced either in nuclear reactors or accelerators or isolated from the debris of hydrogen bomb explosions. The first of such elements is Neptunium (Element 93) discovered in 1940. The latest is Element 109 discovered in 1982 by the Institute for Heavy Ion Research (GSL) at Darmstadt (West Germany). *Elements up to 103 (1961) are included in this table.

All man-made elements decay quickly. Element 109, for instance, survives as such for only five-thousandths of a second and turns into Element 107 which after a short time emits an alpha particle and becomes

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* Element 108 has not so far been discovered

Element 105. Next one of the protons in the nucleus is transformed into a neutron, emitting a positive electron (Positron) in the process and becomes Element 104. This element splits into two and the process of decay is halted.

Isotopes. Elements are numbered according to the number of protons in their atomic nuclei. But the atomic nucleus also contains neutrons which add to the mass of the atom and can affect its stability and radio activity. The atoms of the same element may contain different numbers of neutrons. These are called their isotopes. It is calculated that about 8000 isotopes may exist for the known atoms. Actually only 2000 are known today. The rest remains to be identified.

Elements and Symbols		*Atomic Number*	*Atomic Weight*	*Discoverer*	*Date*
Actinium	AC	89	227.0	A. Debierne	1899
Aluminium	Al	13	27.0	F. Wohler	1827
Americium	Am	95	243	G. Seaborg & others	1944
Antimony	Sb	51	121.8	B. Valentine	1604
Argon	A	18	39.9	W. Ramsay and J. Rayleigh	1894
Arsenic	As	33	74.9	A. Magnus	(?) 1250
Astatine	At	85	210	E. Segre & others	1940
Barium	Ba	56	137.3	H. Davy	1808
Berkelium	Bk	97	249	S. Thompson & others	1949
Beryllium	Be	4	9.0	N. Vauquelin	1798
Bismuth	Bi	83	209.0	C. Geoffrey the Younger	1953
Boron	B	5	10.8	H. Davy	1808
Bromine	Br	35	79.9	A. Balard	1826
Cadmium	Cd	48	112.4	F. Stromeyer	1817
Calcium	Ca	20	40.1	H. Davy	1808
Californium	Cf	98	251	S. Thompson & others	1950
Carbon	C	6	12.0	....	Prehistoric
Cerium	Ce	58*	140.1	J. Berzelius & Wd' Hislinger	1803
Cesium	Cs	55	132.9	R. Bunsen & G. Kirchhoff	1860
Chlorine	Cl	17	35.5	K. Scheele	1774
Chromium	Cr	24	52.0	N. Vauquelin	1797
Cobalt	Co	27	58.9	G. Brandt	c. 1735
Copper	Cu	29	63.5	....	Prehistoric
Curium	Cm	96	248	G. Seaborg & others	1944
Dysprosium	Dy	66*	162.5	L. de Boisbaudran	1886
Einsteinium	E	99	254	A. Ghiorso & others	1953
Erbium	Er	68*	167.3	C. Mosander	1839
Europium	Eu	63*	152.0	E. Demarcay	1896
Fermium	Fm	100	253	A. Ghiorso & others	1952
Fluorine	F	9	19.0	H. Moissan	1886
Francium	Fr	87	223	M. Perey	1939
Gadolinium	Gd	64*	157.3	J. C. de Marignac	1880
Gallium	Ga	31	69.7	L. de Boisbaudran	1875
Germanium	Ge	32	72.6	C. Winkler	1886
Gold	Au	79	197.0	....	Prehistoric
Hafnium	Hf	72	178.5	D. Coster & G. De Hevesy	1923
Helium	He	2	4.0	J. C. P. Janssen & N. Lockyer	1868
Holmium	Ho	67*	164.9	J. Soret & M. Delafontai	1878
Hydrogen	H	1	1.0	H. Cavendish	1766
Indium	In	49	114.8	F. Reich & T. Richter	1863
Iodine	I	53	126.9	B. Courtois	1811

Iridium	Ir	77	192.2	S. Tennant	1803
Iron	Fe	26	55.9	....	Prehistoric
Krypton	Kr	36	83.8	W. Ramsay & M. Travers	1898
Lanthanum	La	57★	138.9	C. Mosanter	1839
Lawrencium	Lr	103	257.0	A. Ghiorso & others	1961
Lead	Pb	82	207.2	...	Prehistoric
Lithium	Li	3	6.9	A. Arfvedson	1817
Lutetium	Lu	71★	175.0	G. Urbain	1907
Magnesium	Mg	12	24.3	Recognized by J. Block	1755
Manganese	Mn	25	54.9	Recognized by K. Scheele	1774
Mendelevium	Mv	101	256	A. Ghiorso & others	1955
Mercury	Hg	80	200.6	....	Prehistoric
Molybdenum	Mo	42	95.9	K. Scheele	1778
Neodymium	Nd	60★	144.2	C. Von Welsbach	1885
Neon	Ne	10	20.2	W. Ramsay & M. Travers	1898
Neptunium	Np	93	237	E. McMillan & P. Abelson	1940
Nickel	Ni	28	58.7	A. Cronstedt	1751
Niobium (Columbium)	Nb	41	92.9	C. Hatchett	1801
Nitrogen	N	7	14.0	D. Rutherford	1772
Nobelium	No	102	254	Fields & others	1951
Osmium	Os	76	190.2	S. Tennant	1803
Oxygen	O	8	16.0	J. Priestley	1774
Palladium	Pd	46	106.4	W. Wollasten	1803
Phosphorus	P	15	31.0	H. Brand	1669
Platinum	Pt	78	195.1	D. de Ulloa	1735
Plutonium	Pu	94	242	G. Seaborg & others	1940
Polonium	Po	84	210.0	P. & M. Curie	1898
Potassium	K	19	39.1	H. Davy	1807
Praseodymium	Pr	59★	140.9	C. von Welsbach	1885
Promethium	Pm	61★	147	J. Marnsky & others	1947

Rubik Presents New Puzzle

Erno Rubik, the Hungarian mathematician, designer and inventor, introduced his Rubik Magic, successor to the Rubik Cube, at the Budapest Trade Fair last September.

Mr. Rubik, 42, hopes to sweep the world with another puzzle craze. Like the cube, the challenge of Rubik Magic is to manipulate shapes from chaos into a pattern.

He designed the cube 10 years ago as a tool for teaching algebraic group theory to a class at the Budapest Academy of Applied Arts, where he was earning less than $ 200 a month as a professor.

Millions of the cubes were sold around the world, making, Mr. Rubik rich. But sales of the cubes stopped and they are now considered cultural artifacts.

Protactinium	Pa	91	231.0	F. Soddy & others	1917
Radium	Ra	88	226.1	P. & M. Curie	1898
Radon	Rn	86	222.0	Rutherford (thoron isotope) E. Dorn (radon isotope)	1899 1900
Rhenium	Re	75	186.2	E. Noddack & others	1925
Rhodium	Rh	45	102.9	W. Wollaston	1803
Rubidium	Rb	37	85.5	R. Bunsen & G. Kirchhoff	1861
Ruthenium	Ru	44	101.1	K. Claus (or Klaus)	1844
Samarium	Sm	62★	150.4	L de Boisbaudran	1879
Scandium	Sc	24	45.0	L. Nilson	1879
Selenium	Se	34	79.0	J. Berzelium	1817
Silicon	Si	14	28.1	J. Berzelium	1824
Silver	Ag	47	107.9	....	Prehistoric
Sodium	Na	11	23.0	H. Davy	1807
Strontium	Sr	38	87.6	H. Davy	1808
Sulphur	S	16	32.1	....	Prehistoric
Tantalum	Ta	73	181.0	A. Ekeberg	1802
Technetium	Tc	43	99	E. Segre & C. Perrier	1937
Tellurium	Te	52	127.6	M. von Reichenstein	1782
Terbium	Tb	65★	158.9	C. Mosander	1843
Thallium	Tl	81	204.4	W. Crookes	1861
Thorium	Th	90	232.0	J. Berzelium	1828
Thulium	Tm	69★	168.9	P. Cleve	1879
Tin	Sn	50	118.7	....	Prehistoric
Titanium	Ti	22	47.9	W. George	1791
Tungsten (Wolfram)	W	74	183.9	G. & F.d'Ethuyar	1783
Uranium	U	92	238.0	E. M. Peligot	1841
Vanadium	V	23	51.0	A. Delrio	1801
Xenon	Xe	54	131.3	W. Ramsay & M. Travers	1898
Yetterbium	Yb	70★	173.0	C. Marignac	1878
Yttrium	Y	39	88.9	J. Gabolin	1794
Zinc	Zn	30	65.4	....	Prehistoric
Zirconium	Zr	40	91.2	M. Klaproth	1789

★ Rare Earths: Fifteen elements from atomic number 57 to 71 are collectively known as Rare Earths because they are remarkably similar in their chemical behaviour

THE WORLD OF SOUND

Radio Telescopes have opened a new world to the astronomer – a world of sound, not of sight. The two worlds are fantastically different. The Milky Way, for example, is a river of light to the eyes but it is a hissing mass to the ears.

Radio Telescopes, in fact, help us to listen in to stars or galaxies that lie far beyond the ken of the world's largest optical telescopes. They also enable us to study astral phenomena which are within the range of our optical telescopes but which are not visible owing to the haze of cosmic dust. Thus it is that we have managed to collect what little we know about the galactic centre of the Milky Way (See the *Milky Way*).

Sound is produced by the vibrations of an object or mechanism and transmitted in the form of waves – alternating increase and decrease in pressures. It radiates outward through a material medium of molecules, more or less like the ripples spreading out on water after some heavy object has been thrown into it

Two elements of sound are important, namely the *pitch* or *frequency* and *intensity* or *loudness*. The pitch or frequency refers to the rate of vibration of the sound and is measured in Hertz (Hz) units. The frequency of sound is determined by the number of times the vibrating waves undulate per second. The slower the cycle the lower the pitch. The pitch becomes higher as the cycles increase in number or which is the same thing, as frequencies increase.

The intensity or loudness is measured in decibels. A decibel (db) (one-tenth of a *bel*) is a physical unit based on the weakest sound that can be detected by the human ear. It is named after Alexander Graham Bell, the inventor of the telephone. The decibel scale is logarithmic, that is, an increase of 10 db means 10 times as much, an increase of 20 db means 100 times and 30 db 1000 times etc. A light whisper may be about 10 db, a quiet conversation around 20 db, and normal talk 30 db. In comparison the electrically amplified beat music in a disco is a billion times louder than the sound of a whisper at 10 db. (see Box *Noise Scale)*.

Ultra-sonics. The human ear cannot generally hear sounds of frequencies higher than 20,000 vibrations per second or in modern International Units 20,000 Hz. *(see International Units*). Sounds of frequencies higher than 20,000 Hz which are inaudible are called *ultra-sonic.* Bats produce very high sound when they fly but they are at ultra-sonic frequencies from 20,000 to 100,000 Hz. So we cannot hear them. Ultra-sonic waves are an important tool of research in physics. There are also many applied uses for ultra-sonic waves, like submarine echo sounding, detection of flaws in casting, drilling glasses and ceramics, emulsification etc.

The speed of sound varies according to the nature of the carrier media. When we speak of the speed of sound, we ordinarily mean the speed at which sound travels in air at sea level. This is around 1088 feet per second. In water, sound travels about 5 times faster than in air. In iron and steel it is even faster, about 3 times faster than the speed in water. Speeds of sound through some selected media are indicated below: *ice-cold water*–4938 ft. per second, *brick*–11,620 ft., *granite*– 1296 ft., *hardwood*–12,620 ft. and *glass*–16,410 to 19,690 feet per second.

Super-Sonics. Supersonic speed is speed greater than that of sound in air at sea level, that is to say, around 1216 Km per hour. Supersonic speed is measured in *Mach*. This unit was worked out by the Czech-born German physicist *Ernst Mach* and therefore named after him. Mach is the ratio of the speed of flight to the speed of sound, under the same conditions of pressure and density. When a plane moves at the speed of sound, it is Mach 1. When a plane moves at twice the speed of sound (supersonic), it is Mach 2. When it is less than the speed of sound it is *sub-sonic* and therefore lesser than Mach 1.

Noise Scale

1. Breathing	*10 db*
2. Wind in the trees	*20 db*
3. Quiet Conversation	*20-30 db*
4. Ticking Clock	*30 db*
5. House in a quiet street	*35 db*
6. Radio Music	*50-60 db*
7. Loud conversation	*60 db*
8. Office noise	*60 db*
9. Children playing	*60-80 db*
10. Lawn mower	*60-80 db*
11. Vacuum cleaner	*80 db*
12. Traffic Noise	*60-90 db*
13. Sports car	*80-95 db*
14. Heavy truck traffic	*90-100 db*
15. Motor Cycle	*105 db*
16. Pneumatic drill	*110 db*
17: Thunder storm	*110 db*
18. Beat Music (electrically amplified)	*120 lb*
19. Aircraft noise	*90-120 db*
20. Jet takeoff (at 100 m distance)	*120 db*
21. Jet engine (at 25 m distance)	*140 db*
22. Space Vehicle launch (from a short distance)	*140-170 db*

At half the speed of sound it is Mach ½.

Sound barrier. Sound barrier is the point at which the speed of flight equals the speed of sound. When a plane flies faster than sound, it is said to cross the *sound barrier*. When the sound barrier is passed, the speed of the aircraft produces shock waves in the atmosphere, somewhat like the bow waves produced by fast-moving ships. The shock waves in the atmosphere produce booms like thunder claps. These are called *sonic booms*. The sonic booms jar on the ears of the resident population in the areas over which the plane flies but they do not trouble the passengers or the crew because the plane goes faster than the shock waves which are, practically, left behind.

The human ear can safely respond to pressures up to 120 db. Any intensity higher than this is harmful and can conceivably damage the ear. This would be clear, if we examine the functioning of the ear.

The Ear. The ear consists of three parts, the *outer ear*, the *middle ear* and the *inner ear*. The outer ear (*auricle*) collects the sound stimuli. These are carried through a canal to the middle ear. The canal is not straight and is the widest where it meets the outer wall of the middle ear, the ear drum. The sweat glands of the canal are modified to secrete a kind of wax--the ear wax. The middle ear is a cavity in the temporal bone which is a part of the skull. The *tympanic membrane* or the ear drum receives the sound vibrations from the outer ear.

Three minute pieces of bone bridge the cavity, the *hammer*, the *anvil* and the *stirrup* (so called from their shapes). These transmit the vibrations received by the middle ear to the inner ear. The inner ear is a small but elaborate structure which houses two distinct organs–one for hearing and the other for balance. The organ for hearing, called the *cochlea* is a snail-shaped container which transmits sound vibrations as nerve impulses to the brain. It is the brain that initiates the entire system of varied bodily responses to sound.

Thus, the brain activates the pituitary gland which in turn causes the thyroid and adrenal glands to excrete hormones. It stimulates the sympathetic nervous system which influences the heart, the stomach, the pupil, blood vessels and motor nerves which control muscle reactions. These and other reactions determine our bodily responses to sound.

A common misconception is that the ear gets accustomed to excessive noise if it is heard *continually*. Actually what happens is that the ear progressively loses its sensitivity and ability to transmit sound vibrations to the brain resulting in various degrees of deafness. Such disabilities become markedly noticeable in old age.

Noise pollution. Sound is either music or noise–so goes an old saying. What is implied by this distinction is that whatever is pleasant to the ear is music while all that is unpleasant is noise. Such phrases as 'grating on the ears' or 'jarring on the nerves' express the discomfort we feel on hearing unpleasant sounds. It is such unpleasant impacts of sound that are collectively described as *noise pollution*.

All cities and towns labour under noise pollution in varying degrees. The worst offenders are the big cities, whose noisy traffic itself is a potent menace to hearing. A study recently conducted in West Germany showed that 2.5 million people (out of nearly 63 million) live in places where the noise level is high. This is a small percentage, as percentages go, but it indicates only those who are exposed to the greatest danger.

It does not mean that others are unaffected by noise pollution. Even noises at much lower levels can be harmful, especially during sleep and recuperation. Anything tha disturbs the repose of sleep is detrimental to health in the long run. Barking dogs and fighting cats can interfere with sleep whethe in the town or in the country.

Future Doom. During work hours noise is definitely a deterrent to concentration. From 50 db onwards noise can interfere with normal voice communication. At 70 db even norma conversation becomes impossible. However some people have become so accustomed to noise that they cannot concentrate on their work in the absence of familiar sounds like the radio. May be, these people do turn ou better work in a noisy environment but the are heaping up trouble for the future.

The constant exposure to noise will steadily deteriorate the delicate parts of the middle ear, which would fail more and more in transmitting sound impulses to the inner ear, ultimately resulting in inefficient bodily responses to sound.

A study jointly conducted by the Indian Council of Medical Research and the Department of Science and Technology during the period from 1977 to 1982 showed that more than 10% of the urban population and about 7% of the rural population in India suffer from mild to severe hearing impairment. The fact that a greater percentage of the urban population–almost one and a half times of its rural counterpart–suffer from defective hearing clearly shows the dangers posed by higher noise pollution levels.

CRYOGENICS

Cryogenics is one of the youngest sciences, having come into existence only in the 20th century. The name 'Cryogenics' is derived from a Greek word meaning, 'productive of cold'. Cryogenics deals with the production of 'very low' temperatures and the study of their physical and technological consequences.

'Very low' temperatures are generally taken to mean temperatures below −150°C and thereabouts. Absolute Zero clearly belongs to the domain of cryogenics. It is apparently unattainable on Earth.

The lowest temperature that we have reached or rather produced on Earth is only one-millionth of a degree above Absolute Zero. Scientists the world over are continuously working at reaching at least one-hundredth of the degree Absolute. This is a world far below the freezing point as we understand it. In this sub-freezing world strange things happen.

All known elements freeze solid, except helium which remains liquid. Rubber becomes so brittle that it shatters like glass. Lead rings like a bell when struck. Air freezes into a solid block. All these happen not at the point of Absolute Zero but within about 10 points above it.

Helium. Helium, the second lightest of all gases (the lightest is hydrogen), has proved to be a most slippery and recalcitrant gas. Curiously enough, this gas was first found in 1868 in the Sun's atmosphere* by Sir Norman Lockyer, the British astronomer, through the spectroscope. In 1895 Sir William Ramsay found it on Earth in the uranium ore – *Clevite*. Later it was established that helium is found in all radioactive minerals and that it is released on Earth by the radioactive decay

Highest Ever Temperature

The highest temperature ever recorded in a laboratory — 10 times hotter than the centre of the sun — was announced in August, 1986 and hailed as a big step towards the development of fusion energy.

The U.S. energy department said a temperature of 200 million degrees celsius was achieved in mid-July by fusion scientists and engineers using the Tokamark Fusion Test Reactor at the department's Princeton, New Jersy, Plamsa Physics Lab.

This was two times hotter than the previous record, which was set in 1980 using the Princeton Large Torus Reactor, the department said.

"This marks a major milestone in progress toward the development of fusion energy," said Energy Secretary John Herrington. "The temperature achieved is in the range required for a fusion reactor These promising results bring us closer to the goal of fusion energy".

Fusion reactions occur when the neclei of the isotopes of hydrogen — deuterium and tritium — "fuse" to form a helium atom, releasing energy in the process.

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* The name 'helium' is derived from *helios* meaning the Sun.

of these minerals. Ordinary air contains 1 part in 200,000 of helium.

Helium has several usable advantages. It is inert and noninflammable. It is used for inflating airships. It resisted all attempts at liquefaction till 1908, when it succumbed to Dr. Kamerlingh-Onnes at Leyden. Thus, it is the last gas to be liquefied. Liquid helium has many remarkable properties which are not wholly understood as yet. It is indispensable in cryogenics as a medium to cool other substances to temperatures near the Absolute Zero. It is the only element that we know of which refuses to solidify even in the dangerous vicinity of Absolute Zero.

One of the surprises at low temperatures is *Superfluidity*. If liquid helium is poured into a flask, separated into two chambers by a partition, it seeps through the solid partition to become level in both chambers.

Superconductivity. Another surprising phenomenon is superconductivity. Superconductivity was first discovered at the University of Leyden in 1911 by Dr. H. Kamerlingh-Onnes, who was awarded the Nobel Prize in 1913 for his earlier work of liquefying helium. However, it was only in 1957 that the theory caught up with experiment. Nobel Prize winner Dr. John Bardeen (1956) of the University of Illinois and his associates presented the first theory of superconductivity in 1957. The theory is based on quantum mechanics and is highly technical. Some 300 materials – 25 elements and the rest alloys or compounds – are, now known to be superconductors.

The application of superconductivity (that is, the total disappearance of electrical resistance) to electric power engineering promises to increase capacity, reduce cost and improve reliability of power grids. A transmission line made of superconducting niobiumin and roughly the diameter of arm, could carry as much power as the peak load now being used in the whole of the United States.

Cryogenics has thousands of other applications. Rapid freezing by liquid nitrogen, for instance, confers improved taste, texture, aroma, nutritive value and appearance to food articles besides reducing degradation by bacteriological, enzymatic, oxidative and chemical reactions.

Temperature Scales

Three systems of temperature measurement are now in use – the Celsius scale, the Fahrenheit scale and the Kelvin scale. The Celsius scale was worked out by the Swedish physicist and astronomer Anders Celsius in 1742.*

It appears to have been revised by another Swedish physicist J. P. Christen. This scale was originally known as the Centrigrade. It was re-named Celsius scale in honour of its inventor Celsius. The Fahrenheit scale was devised by the German-born physicist Gabriel Daniel Fahrenheit (1686-1736) around 1715. The Kelvin scale was pioneered by the British physicist William Thompson Kelvin (1824-1907), later Lord Kelvin.

The International System of Units recognises the Celsius and Kelvin scales. The Kelvin scale is derived from thermodynamics and is of special importance to scientists. The scale generally used by all is the Celsius. The unit of temperature adopted by the SI is based on the Triple Point of Water, that is, the temperature at which solid, liquid, and gaseous water are all in equilibrium. The triple point has been defined as 273.16K† (Kelvin) which is equivalent to 0.01°C. Zero degree Kelvin is the Absolute Zero. This corresponds to −273.16° Celsius and −459.69° Fahrenheit.

Absolute Zero is a thermodynamic concept, that is to say, it is based on heat energy. It is the point at which molecules have no heat energy. At this point all motion stops. Even atomic particles slow down.

Conversion Formula

Kelvin to Celsius	$K=C+273.16$
Celsius to Fahrenheit	$C=F-32\times5/9$
Fahrenheit to Celsius	$F=C\times9/5+32$

* In 1730 Rene Reaumur devised an alcohol thermometer with graduated scale 0° to 80°, 0° being the freezing point of water and 80° the boiling point. It was popular for a time but gradually went out of use.

† In 1967 the notation degree Kelvin (K°) was replaced by Kelvin (K).

Cryogenic freezing systems, being more economical than conventional systems, could be very handy for refrigerated transportation f marine food, fruits, vegetables and other perishable foods.

Blood Freezing. In medicine, human blood used for transfusion in hospitals cannot normally be preserved beyond three weeks. A new blood freezing technique recently developed using liquid nitrogen could now be used for storing bloods for months or even years. Cryogenics could also be used to store marrow cells in marrow banks of hospitals.

Cryosurgery has several advantages over normal surgery. It could be used to treat Parkinson's disease and other disorders of nvoluntary movement. Tumours could be rozen and removed with little loss of blood. Bloodless cryosurgery could also be used in onsilectomies and in the removal of cataracts of the eyes.

Vast quantities of natural gases are burnt every year for want of economical methods for liquefying them in the country. The gases burnt at the refineries or oil fields could be liquefied by cryogenic methods and transported to the remote corners of the country for use by those who do not have the advantage of city gas lines. Liquid methane could reduce the cost of supersonic flights by about one-third.

Work on application of cryogenics is at present going on in nearly a dozen centres in India. They include the National Physical Laboratory, New Delhi, the Tata Institute of Fundamental Research, Bombay, the Indian Institute of Science, Bangalore, the Indian Association for Cultivation of Sciences, Jadavpur, the Physics Department of Delhi University, the Solid State Physics Labortory, Delhi, and the Indian Institute of Technology, Kanpur.

TIME SYSTEMS

The earliest instruments for measuring time included many devices like the Sun dial and the water clock which were used in Egypt. These instruments were crude. In the 2nd century BC, Ctesibius, a Greek engineer of Alexandria, re-designed the ancient Egyptian water clock and made it popular.

The improved water clock was the best of he ancient timepieces. During the Middle Ages mechanical clocks run by falling weights came into vogue. These were more convenient than the water clocks but no more accurate. Both erred by as much as half an hour per day.

Time Units. In 1884 the second – the owest unit of time – was defined as 1/86400 of he time that the Earth took to complete one otation on its own axis or 1/86400 of a day of 4 hours. This, of course, meant that the 4-hour day was made up of 86,400 seconds.

But the Earth wobbles as it rotates. This wobbling leads to fluctuations in the time of otation. It was therefore decided in 1960 to bandon the period of rotation as the primary unit (that is, a day of 24 hours), and to adopt he period of revolution (of the Earth round he Sun) as the basis of calculations. The econd was thus re-defined as 1/31,556,925.9747 of the time that the Earth took to complete one revolution round the Sun. A year of 365 days and odd, thus consisted of about 31.5 million seconds.

Atomic Time. In 1967 the *General Conference on Weights & Measures* recognised the atomic second as determined by the ***cesium*** (caesium) ***atom clock*** as the unit of time under the International System of Units (SI). The atomic second is defined as the time taken by the cesium electron to complete 9,192,631,770 spins.

The definition is not as accurate as it looks because the cesium electron may sometimes take more spins and sometimes less spins than the defined norm. The deviation, however, is only a few spins either way, that is, a few spins more or less than 9192 million spins. This is insignificant.

The atomic clock has two specific advantages. It is not affected by the vagaries of the atmosphere nor by the fluctuations in the rotation of the Earth. The latter has become important in recent years. For, it has been observed from 1970 onwards that the Earth is slowing down in rotation by nearly a second every year.

Since this error has been noticed, clocks all over the world are being corrected at the beginning of every year to conform to the atomic time. The atomic clock developed by the British National Physical Laboratory has achieved a very high degree of accuracy. It is accurate to one second in 300 years.

Universal Time. Since January 1972, a new standard of time called the *Co-ordinated Universal Time* (UTC) has also been maintained in Paris, the headquarters of the General Conference on Weights & Measures. This is not based on any single atomic clock but on the average of atomic clock readings from 18 timing centres around the world.

The UTC does not gain or lose more than one hundred millionth of a second per day. This has whittled down the infinitesmal error of the atomic clocks to the vanishing point. It is expected that the UTC will remain absolutely correct for a quarter million years.

Standard Time. The system of Standard Time was introduced to co-relate the time systems of various countries on an international basis. For this purpose the Earth was divided into 24 longitudinal zones, each zone being 15 degrees of an arc or one hour apart in time. The zero zone is centred at Greenwich (London) which gives the GMT or the Greenwich Mean Time. The 12th zone is divided by the 180th meridian, the International Date Line.

The zones to the east of this line are numbered from 1 to 12 with the prefix *minus* indicating the number of hours to be subtracted to obtain the Greenwich Time. The zones to the west are similarly numbered with the prefix *plus* which shows the number of hours that must be added to get the Greenwich Time.

The following zones are fast on Greenwich Time by the number of hours indicated in brackets:

Fiji, New Zealand etc. (12 hrs.). New Caledonia, New Hebrides etc. (11). Queensland, Tasmania etc. (10). Japan, Korea etc. (9). China, Hongkong, Philippines etc. (8). Singapore (7½). Java, Thailand etc. (7). Burma, Cocos Keeling Islands (6½). Bangladesh (6). India, Sri Lanka, Andaman and Nicobar Islands (5½). Pakistan (5). Mauritius, Seychelles etc. (4). Iran (3½). Iraq, Ethiopia etc. (3). Turkey, Greece, Bulgaria etc. (2). Sweden, Norway, Denmark etc. (1).

The following areas are slow on Greenwich Time by the number of hours indicated:

Iceland, Madeira etc. (1). Azores, Cape Verde etc. (2). Greenland (excluding Scores by Sound and Thule) and Eastern Brazil (3). Newfoundland, Labrador, Dutch Guiana and Uruguay (3½). Canada (East of 68°W.), Greenland (Thule area), Puerto Rico etc. (4). Canada (from 68°W. to 85°W. North). Jamaica, Bahama, Bahama Is., Cuba, Haiti, Peru, Panama etc. (5). Canada (from 85°W. North), Costa Rica, Salvador, Honduras, Guatemala, Nicaragua, Central parts of USA and parts of Mexico (6). Canada (from 102°W. to 120°W.), mountains States of USA and parts of Mexico (7). Canada (West of 120°W.), Alaska (south east), Western States of USA and parts of Mexico (8). Alaska (north of Cross Sound), Yukon, Christmas Is. (9). Alaska (from 141°W.), Hawaii etc. (10). Aleutian Is., Alaska (west coast), Samoa, Midway Is. (11).

International Date Line. The Date line is a zigzag line that coincides more or less with the 180th meridian. When the Date line is crossed to the west the date must be advanced by one day. When the Line is crossed to the east, the date must be set back by one day. The Line is deflected between north latitudes 48 and 75 with the result that all Asia lies to the west of the line.

The twenty-four-hour time is now being increasingly used especially by railways and other transport organizations. Its great advantage is that it dispenses with the suffixes *a.m.* and *p.m.* In the 24-hour system, day begins at midnight, the zero hour, and the hours that follow are consecutively numbered from 0 to 23.

NUMERALS

The numerals, now in everyday use, are called Arabic numerals, because it was from the Arabs that these numerals spread to Europe. Actually, they are Indian in origin and should rightly be called Indian numerals.

The concept of zero and the digital system (including decimals) are India's contributions to the science of numerals. The Arabs adopted the Indian system. The Europeans got it from the Arabs (See Landmarks of Science).

Among the authors, who were instrumental in transmitting Indian mathematical knowledge from Arab sources to Europe,-the most famous is Leonard of Pisa (A.D. 1202). Other important authors were: John of Seville (1135), Adelard of Bath (1142), Robert of Chester (1142), Villedien (1240) and Sacrabosa (1242).

Roman Numerals. Roman Numerals are those used by the ancient Romans. They are letters converted into numbers I = 1, V = 5, X = 10, etc. They do not follow the digital system of Arab numerals. The general rules of Roman numerals are the following: (1) Repeating a letter repeats its value: XX = 10 + 10 = 20. (2) A letter placed after one of greater value adds thereto: VI = 5+1 = 6. (3) A letter placed before another of greater value subtracts therefrom: IV = 5 − 1 = 4. (4) A dash line over a numeral multiplies its value by thousand: $\overline{X}$ = 10 × 1000 = 10,000.

Some high Arabic numerals cause a lot of confusion, when used as words. The classic instance is *billion** which in U.S. is equal to *a thousand million* and in Britain to *a million-million.*

Arabic numerals and their corresponding Roman numbers ares given below:

Arabic & Roman

1	I	11	XI	30	XXX
2	II	12	XII	40	XL
3	III	13	XIII	50	L
4	IV	14	XIV	90	XC
5	V	15	XV	100	C
6	VI	16	XVI	200	CC
7	VII	17	XVII	400	CD
8	VIII	18	XVIII	500	D
9	IX	19	XIX	900	CM
10	X	20	XX	1000	M

Multiples $\overline{V}$ 5000; $\overline{X}$ 10,000; $\overline{L}$ 50,000; $\overline{C}$ 100,000; $\overline{D}$ 500,000; $\overline{M}$ 1,000,000.

Higher Numerals

Number		US & France	UK & Other European Countries	India
1 & 5	zeros	One Hundred Thousand	One Hundred Thousand	One Lakh
,, 6	,,	Million	Million	Ten Lakhs
,, 7	,,	Ten Million	Ten Million	One Crore
,, 8	,,	Hundred Million	Hundred Million	Ten Crores
,, 9	,,	Billion	Milliard (Thousand Million)	Hundred Crores
,, 12	,,	Trillion	Billion	...
,, 15	,,	Quadrillion	Thousand Billion	...
,, 18	,,	Quintillion	Trillion	...
,, 21	,,	Sextillion	Thousand Trillion	...
,, 24	,,	Septillion	Quadrillion	...
,, 27	,,	Octillion	Thousand Quadrillion	...
,, 30	,,	Nonillion	Quintillion	...
,, 33	,,	Decillion	Thousand Quintillion	...

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* The word 'billion' wherever it is used in this book means a 'thousand million' (American sense) unless otherwise indicated

INTERNATIONAL UNITS

During the first half of the present century, there were two widely used systems of Weights and Measures – the Imperial System and the Metric System. The Imperial System prevailed in the British Empire.

The English speaking countries including the United States also adopted the Imperial System. The Metric System was followed in France and other European countries and their colonies and dependencies.

Imperial System. The Imperial System was derived from the old Anglo-Saxon measurements. They were rough and ready units based on standards that were readily available everywhere – the human hand, for example. In their very nature, they could never be precise and, worse, they changed from person to person and from place to place.

The *inch* was the 'knuckle of the thumb.' A *yard* was the distance from the tip of *King Edgar's* nose to the tip of the middle finger of his outstretched hand. An *acre* was the amount of land that could be ploughed in a day by a yoke of oxen. The *mile* came from the Roman legionaries. Their *milli* was 1000 paces or about 1618 yards. Paces being vastly different, the mile was eventually standardised at 1760 yards.

It was from such a conglomeration of odd units that the Imperial System of weights and measures was ultimately evolved. Although these basic units are now precisely defined, their conversion into larger or smaller units is an arithmetical torment. The mile, for example, is 12×3×220×8 inches and the short ton in 16×16×14×2×4×20 drams.

Metric System. The Metric System, unlike the Imperial System, was deliberately thought out. This system was adopted by France in 1790 and propagated in other European countries by Napoleon. As adopted in France, the new unit of length was the *metre* which was equal to one-ten millionth of a quadrant of the Earth's meridian. The unit of weight or mass was the *kilogram*, which was defined as the mass of a cubic decimetre (0.1 c metre) of water. The volume represented by a cubic decimetre of water was to be called a *litre*.

In 1870 France called together a convention to evolve a unified metric system. In 1875 the Treaty of the Metre was signed in Paris. The treaty established an *International Bureau of Weights* and *Measures*, and *a General Conference on Weights* and *Measures*, which would meet periodically to adopt new definitions as the need arose.

In 1889 the metre and the kilogram were re-defined in terms of a bar of platinum-iridium alloy which was stored in a vault in Paris.

Today the metric system has been adopted by almost all nations.†

International System. In 1954 the General Conference on Weights & Measures adopted one form of the Metric system as an internationally suitable system. In 1960 the system was named *System International de Unites* or the International System of Units, shortened to SI.

The system rests on 4 independent base units for *length*, *mass*, *time* and *temperature*. The units for length and mass are the *metre* and the *kilogram* respectively. The unit of time is the *second*, which has been defined in terms of the atomic clock. The unit of temperature is the degree Celsius (centigrade) or *Kelvin* as opposed to Fahrenheit. The conference has also accepted certain well-established units like the *minute* and the *hour* (units of time), the *degree*, the *minute* and the *second* as units of angular measurement and the *nautical mile* and *knot*.

The spectacular development of science

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† In 1971 the US decided to change over to the Metric System in ten years at the end of which the US will be predominantly but not exclusively on the Metric System. The Metric Conversion Act of 1975 legalised the change-over and set up the US Metric Board to supervise it.

Table of Metric Weights and Measures

Linear Measure

10	Millimetres (mm)	=	1	centimetre	(cm)
10	centimetres	=	1	decimetre	(dm)
10	decimetres	=	1	metre	(m)
10	metres	=	1	decametre	(dcm)
10	decametres	=	1	hectometre	(hm)
10	hectometres	=	1	kilometre	(km)

Area Measure

100	square millimetres	=	1	square centimetre	
10,000	square centimetres	=	1	square metre	
100	square metres	=	1	are	(a)
100	ares	=	1	hectare	(ha)
100	hectares	=	1	square kilometre	(sq. km)

Volume Measure

	one litre	=		0.001 cubic metre	
10	millilitres (ml.)	=	1	centilitre	(cl)
10	centilitres	=	1	decilitre	(dl)
10	decilitres	=	1	litre	(l)
10	litres	=	1	decalitre	(dcl)
10	decalitres	=	1	hectolitre	(hl)
10	hectolitres	=	1	kilolitre	(kl)

Weight

10	milligrams (mg.)	=	1	centigram	(cg)
10	centigrams	=	1	decigram	(dg)
10	decigrams	=	1	gram	(g)
10	grams	=	1	decagram	(dcg)
10	decagrams	=	1	hectogram	(hg)
10	hectograms	=	1	kilogram	(kg)
1000	kilograms	=	1	metric ton	(t)

Cubic Measure

1000	cubic millimetres	=	1	cubic centimetre
1000	cubic centimetres	=	1	cubic decimetre
1000	cubic decimetres	=	1	cubic metre

Simple Conversion Table Indian Units

Tolas to grams										
Tolas	1	2	3	4	5	6	7	8	9	10
Grams	11.66	23.33	34.99	46.66	58.32	69.98	81.65	93.31	104.97	116.64
Seers to kilograms										
Seers	1	2	3	4	5	6	7	8	9	10
Kilograms	0.93	1.87	2.80	3.73	4.67	5.60	6.53	7.46	8.40	9.33
Maunds to Quintals										
Maunds	1	2	3	4	5	6	7	8	9	10
Quintals	0.37	0.75	1.12	1.49	1.87	2.24	2.61	2.99	3.36	3.73

Double Conversion Tables for Weights and Measures

Note: The central figures (1 to 100) represent either of the two columns beside them, as the case may be.

Example: 1 centimetre=0.394 inch and 1 inch=2.540 centimetres.
1 metre=1.094 yards and 1 yard=0.914 metre. 1 kilometre=0.621 mile and 1 mile=1.609 kilometres.

Centimetres		*Inches*	*Metres*		*Yards*	*Kilometres*		*Miles*
2.540	1	0.394	0.914	1	1.094	1.609	1	0.621
5.000	2	0.787	1.829	2	2.187	3.219	2	1.243
7.620	3	1.181	2.743	3	3.281	4.828	3	1.864
10.160	4	1.575	3.658	4	4.374	6.437	4	2.485
12.700	5	1.969	4.572	5	5.468	8.047	5	3.107
15.240	6	2.362	5.486	6	6.562	9.656	6	3.728
17.780	7	2.756	6.401	7	7.655	11.266	7	4.350
20.320	8	3.150	7.315	8	8.749	12.875	8	4.971
22.860	9	3.543	8.230	9	9.843	14.484	9	5.592
25.400	10	3.937	9.144	10	10.936	16.094	10	6.214
127.000	50	19.685	45.720	50	54.681	80.468	50	31.068
254.000	100	39.370	91.439	100	109.361	160.936	100	62.136

Hectares		*Acres*	*Square Kilometres*		*Square Miles*	*Kilograms*		*Av. Pound*
0.404	1	2.471	2.590	1	0.386	0.454	1	2.205
0.809	2	4.942	5.180	2	0.772	0.907	2	4.409
1.214	3	7.413	7.770	3	1.158	1.361	3	6.614
1.619	4	9.884	10.360	4	1.544	1.814	4	8.818
2.023	5	12.355	12.950	5	1.931	2.268	5	11.023
2.428	6	14.826	15.540	6	2.317	2.722	6	13.228
2.833	7	17.298	18.130	7	2.703	3.175	7	15.432
3.237	8	19.769	20.720	8	3.089	3.629	8	17.637
3.642	9	22.240	23.310	9	3.475	4.082	9	19.842
4.047	10	24.711	25.900	10	3.861	4.536	10	22.046
20.234	50	123.554	129.498	50	19.306	22.680	50	110.231
40.468	100	247.108	258.995	100	38.611	45.359	100	220.462

Metric Tonnes		*Long Tons*	*Metric Tonnes*		*Short Tons*	*Litres*		*Pints*
1.016	1	0.984	0.907	1	1.102	0.568	1	1.760
2.032	2	1.968	1.814	2	2.205	1.136	2	3.520
3.048	3	2.953	2.722	3	3.307	1.705	3	5.279
4.064	4	3.937	3.629	4	4.409	2.273	4	7.039
5.080	5	4.921	4.536	5	5.512	2.841	5	8.799
6.096	6	5.905	5.443	6	6.614	3.409	6	10.559
7.112	7	6.889	6.350	7	7.716	3.978	7	12.319
8.128	8	7.874	7.257	8	8.818	4.546	8	14.078
9.1444	9	8.858	8.165	9	9.921	5.114	9	15.838
10.161	10	9.842	9.072	10	11.023	5.682	10	17.598
50.803	50	49.211	45.359	50	55.116	28.412	50	87.990
110.605	100	98.421	90.718	100	110.231	56.824	100	175.980

Litres		Gallons	Litres		Gallons
4.546	1	0.220	31.822	7	1.540
9.092	2	0.440	36.368	8	1.760
13.638	3	0.660	40.914	9	1.980
18.184	4	0.880	45.460	10	2.200
22.730	5	1.100	227.298	50	10.999
27.276	6	1.320	454.596	100	21.997

and technology compelled the conference to define precisely, generally known units of measurement like length, mass or time. In addition, the conference had to adopt and define new units of measurement. The labours of the Conference in this regard led to the evolution of a complicated and highly technical international system. The definitions are stated in strict scientific jargon which the layman can hardly follow. A brief outline of the system is given below.

The S.I. Units are broadly divisible into three classes.

1. Base units which form the foundations of the system.
2. Derived units which are generally formed by a combination of Base units.
3. Supplementary units which are used in angular measurement.

The special feature of the system is its coherence. A coherent set of units can be defined as one that arises, when a quotient or product of any two quantities leads to the unit of the resultant quantity. In other words, all units of the system hold together and are explicable in terms of other units.

International Units

Base unit	*Symbol*	*Year of Adoption*
METRE-Unit of length	m	1960
KILOGRAM-Unit of mass	kg	,,
SECOND-Unit of time	S	1967
AMPERE-Unit of electric current	A	1948
KELVIN-Unit of thermodynamic temperature	K	1967
CANDELA-Unit of luminous intensity	cd	,,
MOLE-Amount of substance*	mol	1971

*One mole (mol) is an amount of substance in grams equal to its molecular weight.

Supplementary Units

RADIAN-Plane angle	rad	1960
STERADIAN-Solid angle	sr	1960

Simple Expression in Terms of Base Units

Quantity	*Name*	*Symbol*
Area	square metre	m^2
Volume	cubic metre	m^3
Speed	metre per second	m/s
Density	Kilogram per cubic metre	kg/m^3
Specific Volume	cubic metre per kilogram	m^3/kg
Luminance	candela per square metre	cd/m^2

The base units are defined as under:

Metre. The General Conference on Weights and Measures, an international organization based in France, decided to give a new definition to the metre. Now "the metre is the length of the path travelled by light in vacuum during a time interval of 1/299,792,458 of a second".

Kilogram. It is the mass of the international prototype of the kilogram, which is in the custody of the "Bureau International des Poids et Measures (BIPM) Sevres", near PARIS. Among the base units, the unit of mass is the only one whose name, for historical reasons, contains a prefix (Kilo).

Second. It is the duration of 9192631770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the Caesium-133 atom.

Ampere. It is that constant current which, if maintained in two straight parallel conductors of infinite length, of negligible cross section, and placed at a distance of 1 metre

Derived Units with Special Names

Quantity	*Name*	*Symbol*
Frequency	hertz	Hz
Force	newton	N
Pressure	pascal	Pa
Quantity of electricity	coulomb	C
Electric tension	volt	V
Electric resistance	ohm	Ω
Luminous flux	lumen	lm
Illuminance	lux	lx

apart in vacuum, would produce between these conductors a force equal to 2×10^{-7} newton per metre of length.

Kelvin. It is the fraction 1/273.16 of the thermodynamic temperature of the triple point of water.

Candela. It is the luminous intensity, in the perpendicular direction, of a surface of 1/600000 square metre of a black body at the temperature of freezing platinum under a pressure of 101 325 newtons per square metre.

Mole. It is the amount of substance of a system which contains as many elementary entities as there are atoms in 0.021 kilogram of carbon 12.

Supplementary Units.

The supplementary units are 1. Radian (rad) Plane angle and 2. Steradian (sr) Solid Angle.

Radian. It is the plane angle which, having its vertex at the centre of a circle, cuts off a length on the circumference of the circle equal to the radius of the circle.

Steradian. It is the solid angle which, having its vertex at the centre of a sphere, cuts off an area of the surface of the sphere equal to that of a square with sides of length equal to the radius of sphere.

Multiples and Subdivisions. Multiples and subdivisions (fractions) are indicated by appropriate prefixes. Multiples upto 1000 are indicated by the following prefixes – deca (10), hecto (100), and kilo (1000). Fractions up to 1000 are expressed as follows – deci (1/10), centi (1/100), and milli (1/1000).

For multiples and fractions above 1000 the following prefixes have been adopted.

Multiples

Tera	= 10^{12}(1 followed by	12	zeros)
Giga	= 10^{9} "	9	"
Mega	= 10^{6} "	6	"
Kilo	= 10^{3} "	3	"
Hecto	= 10^{2} "	2	"
Deca	= 10^{1} "	1	"

Fractions

Deci	= 10^{-1}	(0.1)
Centi	= 10^{-2}	(0.01)
Milli	= 10^{-3}	(0.001)
Micro	= 10^{-6}	(Decimal point, followed by 5 zeros and 1)
Nano	= 10^{-9}	(Decimal point, followed by 8 zeros and 1)
Pico	= 10^{-12}	(Decimal point, foolowed by 11 zeros and 1)
Femto	= 10^{-15}	(Decimal point, followed by 14 zeros and 1)
Atto	= 10^{-18}	(Decimal point, followed by 17 zeros and 1)

Thus a kilometre is 1000 metres and a megametre is 1,000,000 metres while a millimetre is 0.001 metre and a micrometre is 0.000,001 metre.

Rules.

Very elaborate rules have been formulated with regard to notation, type to be used, prefix symbols and the exponent to be prefixed to a symbol. Symbols are not to be followed by full stop and do not change in the plural.

Outside S.I.

In 1969 the International Committee on Weights and Measures (CIPM), an auxiliary of the General Conference, recognised the use of some units which were strictly not part of the SI but which were in widespread use. Some of the commoner units and their SI equivalents are given below:

Triple Point.

The triple point of a substance is the combination of temperature and pressure at which its solid, liquid and gas phases can co-exist. For water the triple point lies at a temperature of 0.1 degree Celsius and a pressure of 6.104 millibars. Water molecules whose environment is near to the triple point can be freely interconverted among all the three states.

SI Equivalent

Length

1 angstrom	0.1	nanometre (nm)
1 chain	20.12	metre (m)
1 engineer's chain	30.48	do
1 fathom	1.829	do
1 foot	0.304 8†	do
1 furlong	0.201 2†	kilometre (km)
1 inch	25.4	nanometre (nm)
1 link	0.201 2†	metre (m)
1 mile	1.609	kilometre (km)
1 nautical mile international	1.852	do
1 nautical mile telegraph	1.855	do
1 nautical mile U.K.	1.853	do

Area

1 acre	4047	sq. metre
1 sq. foot	929.0	sq. centimetre
1 sq. mile	2.590	sq. kilometre
1 sq. yard	0.836 1†	sq. metre

Volume

1 cubic foot	28.32	cubic decimetre
1 cubic inch	16.39	do centimetre
1 fluid ounce	28.41	do do
1 gallon, imperial	4.546	cubic decimetre
1 gallon US	3.785	do do
1 pint, imperial	0.586 3†	do do

Mass

1 grain	64.80	milligram
1 hundred weight	50.80	kilogram
1 maund	37.32	do
1 ounce	28.35	gram
1 pound	0.453 6†	kilogram
1 quintal	100	do
1 seer	0.933 1†	do
1 tola	11.66	gram
1 ton	1.016	tonne
1 ton US	0.907 2†	do

Velocity

1 foot per minute	0.005 08†	metre per second
1 foot per second	0.304 8†	metre per second
1 inch per second	25.4	millimetre per second
1 knot	0.514 4†	metre per second
	1.852	km per hour
1 knot UK	0.514 7†	metre per second
	1.853	km per hour
1 mile per hour	0.447 0†	metre per second
	1.609	km per hour

Fuel Consumption

1 gallon per mile	2.825	litre per km
1 US gallon per mile	2.352	do
1 mile per gallon	0.354 0†	km per litre
1 mile per US gallon	0.425 1†	km per litre

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† Among the rules of notation for S.I. one rule says that where a numerical value contains more than three digits, it is advisable to separate the digits into groups of three moving to the left or right of the decimal point. The separation is to be indicated by omitting a space and not by a comma as is usually done. The omission of space in item number 5 in the above table (0.304 8 instead of 0.304,8) and other similar omissions are to be treated as commas and read accordingly.

THE WORLD OF MEDICINE

The world is endowed with many systems of Medicine; Allopathy, Homeopathy, Ayurveda, the Arabic, the Egyptian, the Graeco-Roman,..etc. While the Western system has entrenched itself with multifarious growth, there is a growing awareness about the distinctive efficacy of Eastern systems like the Ayurveda.

All ancient civilisations–Egypt, Babylon, India and China–developed their own systems of medicine. Egypt seems to have been the first and the best in the field. It had a fully developed medical system by the third millennium B.C.

We know very little of the Babylonian system and much less, almost nothing, of the Indus Valley system. The Indian system, as we know it, starts with the Rigveda (2000 B.C.). The earliest known medical treatise in China appeared around 450 B.C.

Egyptian System. The Egyptian system, like all other ancient systems, laboured under a heavy load of superstition and magic. Yet it developed many cures that have stood the test of time. Pain-killing drugs and sedatives were well-known to the Egyptians. Queen Nefretiti is portrayed in a bas-relief as administering a pain-killing drug to her ailing husband, the Pharaoh. ***Henbane,*** a herb, which is known to us as a sedative source was first used by the Egyptians. ***Onion*** as a cure for scurvy and also as a cure for intestinal disorders is an old Egyptian prescription.

The Chinese system must have been many centuries old when the first great medical treatise appeared in China around 450 B.C. This treatise, unlike the Indian ***Rigveda*** and the later ***Atharvaveda,*** is an elaborate treatise on medicine, comparable to the ***Susruta Samhita*** or the ***Charaka Samhita*** of India. It included, among others, detailed descriptions of ***acupuncture*** which has received international publicity during recent times. Between 600 and 900 A.D., the Chinese system of medicine, known as ***Han-Yi,*** had spread to Korea and Japan and much of South East Asia.

Ancient China had developed many cures, some of which have come down to modern times. ***Ephedra,*** a herb which soothes coughs, was known to the Chinese 4000 years ago. ***Rhubarb*** as a laxative was first used in China. ***Pumpkin*** seeds, another Chinese contribution, is a well-known wormridder. It is now found to be effective against snail fever also.

Graeco-Roman. The Graeco-Roman system was almost entirely derived from the Egyptian system. Most of its cures are of Egyptian origin. To the Greeks, we owe the first revolutionary change in medical practice–the liberation of medicine from superstition and magic. ***Hippocrates,*** a Greek physician known as the Father of Medicine in the West, condemned the use of charms and chants in medicine. He laid down a code of conduct for medical practitioners. Scientific therapy started with Hippocrates.

The Arabs revolutionised the science of medicine by effecting a synthesis of Indian medical system and the Graeco-Roman system. They passed on this knowledge to Europe. The influence of Arabic medicine on Europe was widespread and longstanding. ***Qunun*** (Canon) written by the Arab scholar ***Avicenna*** (11th cent. A.D.) became the primary text of medical studies in Europe and continued to be so as late as the 17th century.

Under the Mughal Emperors, Arab medicine came to India. It took root in India, under the name of ***Unani*** , mainly because there was so much in common between the old Indian system and the new Unani system. The term ***Unani*** is derived from the Sanskrit ***Yavana*** meaning Greek. The Unani system continues to this day in India.

Ayurveda. The Indian System known as ***Ayurveda*** originated as far back as 2000 B.C. ***Ayurveda*** is a compound word in Sanskrit, meaning, literally, ***the Science of Life***. Actually, it implies two connected ideas–the science of life and the art of living.

Ayurveda, unlike allopathy or homeopathy, does not swear by any particular principle of cure. Ayurvedic treatment covers all the principles of allopathy, homeopathy and naturopathy. Thus, says Pandit Shiv Sharma, President of the Central Council of Indian Medicine, "the homeopathic opium which cures constipation and the allopathic opium which causes it,

MILESTONES OF MEDICINE

Invention/Discovery	Date	Inventor/Discoverer	Country
Ayurveda	2000-1000 BC	Atreya	India
Western Scientific Therapy	460-370 BC	Hippocrates	Greece
Yoga	200-100 BC	Patanjali	India
Ashtanga Hridaya	c.550 AD	Vagbhata	India
Sidhayoga	c.750	Vrdukunta	India
Anatomia*	1316	Mondino	Italy
Chemotherapy	1493-1541	Paracelsus	Switzerland

* First book on Anatomy

MODERN MEDICINE

Circulation of blood	1628	William Harvey	Britain
Biochemistry	c.1648	Jan Baptista Van Helmont	Belgium
Bacteria	1683	Leeuwenhock	Holland
Neurology	1758-1828	Franz Joseph Gall	Germany
Physiology	1757-66	Albrecht Von Haller	Switzerland
Vaccination	1796	Edward Jenner	Britain
Histology	1771-1802	Marie Bichat	France
Stethoscope	1819	Rene Laennec	France
Embryology	1792-1896	Karl Ernest-Van Baer	Estonia (USSR)
Morphine	1805	Friderich Serturner	Germany
Chloroform as anaesthetic	1847	James Simpson	Britain
Rabies Vaccine	1860	Louis Pasteur	France
Bacteriology	1872	Ferdinand Cohn	Germany
Leprosy bacillus	1873	Hansen	Norway
Cholera, T.B. germs	1877	Robert Koch	Germany
Malaria germs	1880	Laveran	France
Diphtheria germs	1883-84	Klebs & Loffler	Germany
Aspirin	1889	Dreser	Germany
Virology	1892	Ivanovski & Bajernick	USSR, Holland
Psycho-analysis	1895	Sigmund Freud	Austria
Serology	1884-1915	Paul Ehrlich	Germany
Anti-toxins (science of immunity)	1890	Behring & Kitasato	Germany, Japan
Adrenaline	1894	Schafer and Oliver	Britain
Endocrinology	1902	Bayliss & Starling	Britain
Electro-Cardiograph	1906	Einthoven	Holland
Typhus Vaccine	1909	J. Nicolle	France
Sex hormones	1910	Eugen Steinach	Austria
Vitamins	1912	Sir F.G. Hopkins	Britain
Vitamin C	1912	Froelich Holst	Norway
Vitamin A	1913	McCollum and M. Davis	USA
Vitamin B	1916	McCollum	USA
Synthetic Antigens	1917	Landsteiner	USA
Thyroxin	1919	Edward Calvin-Kendall	USA
Insulin for Diabetes	1921	Banting & Best	Canada
Vitamin D	1922	McCollum	USA
Vitamin B1	1926	Minot & Murphy	USA
Penicillin	1928	Alexander Fleming	Britain
Cortisone	1936	Edward Calvin-Kendall	USA
D.D.T. (Dichloro-Diphenyl-Trichloroethane)	1939	Paul Muller	Germany
Rh-factor	1940	Karl Landsteiner	USA
Streptomycin	1944	Selman Waksmann	USA
LSD (Lysergic acid diethylamide)	1943	Hoffman	Swizerland
Kidney Machine	1944	Kolf	Holland
Chloromycetin	1947	Burkholder	USA
Aureomycin	1948	Duggar	USA
Reserpine	1949	Jal Vakil	India
Terramycin	1950	Finlay & Others	USA
Cryo-Surgery	1953	Henry Swan	USA
Open Heart Surgery	1953	Walton Lillehel	USA
Poliomyelitis vaccine	1954	Jonas Salk	USA

Poliomyelitis vaccine (oral)	1954	Albert Sabin	USA
Contraceptive pills	1955	Pincus	USA
Use of artificial heart for surgery	1963	Michael de Bakey	USA
Heart Transplant Surgery	1967	Christian Barnard	S.Africa
First Test Tube Baby	1978	Steptoe & Edwards	Britain
Gene Therapy on humans	1980	Martin Clive	USA
Small Pox eradicated	1980	W.H.O. Declaration	
Genes associated with Cancer	1982	Robert Weinberg & others	USA

both fall within the Ayurvedic therapeutic measures".

According to Ayurveda, "there are three basic constituent complexes in the physiological system called *doshas*. They are *Vayu* or *Vata*, *Pitta* and *Kapha* or *Sleshma*. These terms, though literally they mean *wind*, *bile* and *phlegm* respectively, embrace much more. Between them, they sustain the whole body metabolism.

Good health implies an ideal balance between the three doshic factors. No true *mono-doshic* individual exists. It is the predominance of any particular *dosha* which marks the constitutional types of men. On this basis, humans are divided into three psychosomatic types, namely the *Vataprakriti*, the *pitta-prakriti* and the *kaphaprakriti*.

The Ayurvedic physician has to evaluate the *doshic* picture of the patient and find out what type of *tridosha* predominates and set right the imbalance by prescribing drugs, diets and practices.

Western System. The western system of medicine was later named *Allopathy* by *Hahnemann* to distinguish it from his own system Homeopathy. Allo, from the Greek work *Alos*, means other or another, and implies the treatment of diseases by other drugs, that is, drugs having effects opposed to the symptoms. Homeo, from Greek word *Homos*★, means treatment by drugs having the same effects as the symptoms of disease. In other words, homeopathy (literally, similar suffering) is based on the priniciple 'like cures like' while allopathy is based on the principle that opposites cure opposites.

HUMAN BIOLOGY

The human body is a wonderous amalgam of thousands of small and delicate elements. Here is a glossary of the most essential information that will help you to explore the mysterious world.

A

Abdomen. A large body cavity lying between the thorax (chest cavity) and the pelvis. It contains organs that play a part in digestion (stomach, intestines, spleen, liver, gall bladder and pancreas) and excretion (kidneys and bladder). In women the abdomen also contains the ovaries and womb.

Abortion. The premature expulsion, from the womb, of a foetus during the first 90 days of pregnancy.

Abscess. A painful inflammation in the body tissue, usually occurring as a response to invasion by harmful bacteria.

Achilles tendon. A thick, prominent TENDON at the back of the ankle connecting the calf muscle to the heel.

Acne. An inflammatory disorder of the sebaceous glands just below the skin surface.

Acupuncture. A treatment involving the insertion of needles into the skin, practised for many centuries in China and other Far Eastern countries, and now also used in the West.

Acute. As a description of a disease, acute means that the condition occurs suddenly, lasts for a comparatively short time and is marked by severe symptoms.

Adam's apple. A bulge at the front of the neck formed by the thyroid cartilage, which is attached to the front of the LARYNX, or voice box.

Addison's disease. A disease of the ADRENAL GLANDS, studied by the English physician Thomas Addison (1793-1860), after whom it was named. The outer part (cortex) of the gland wastes away, usually after an infection, causing a deficiency of essential hormones.

Adenoids. Collections of lymphoid tissue that lie at the back of the nasal passages.

Adolescence. The period of life between puberty and adulthood.

Adrenal Glands. A pair of helmet-shaped endocrine glands up to 5 cm. (2 in.) long and situated above the kidneys.

Adrenaline. A hormone secreted by the inner part, or medulla, of the ADRENAL GLANDS.

Agranulocytosis. An acute condition in which the number of granular white cells (granulocytes) in the blood falls drastically.

Albino. An individual who lacks the pigment melanin in the skin, hair and eyes. Albinos have white hair, pink skin, a pink tinge to the eyes, and may be sensitive to light.

Alcoholism. Excessive drinking of alchohol to such an extent that it interferes with the drinker's health, home life or work.

Alimentary Canal. An alternative name for the digestive tract through which food passes to the rectum via the pharynx, oesophagus, stomach and intestines.

Alkaloids. A group of chemicals which occur naturally in plants, and which have profound and varied effects on the human body.

Allergy. An abnormal sensitivity to certain substances. Reactions range from a skin rash or runny nose to severe swelling of the limbs or difficulty in breathing.

Alopecia. The scientific name for baldness. Hair is usually lost from the scalp, although other parts of the body may be involved.

Amion. The thin, tough transparent membrane that encloses the foetus in the womb.

Anaemia. A fall in the number of red cells in the blood or a reduction in the amount of the haemoglobin, the oxygen-carrying pigment that they contain.

Anaesthesia. A loss of feeling in all or part of the body. It can occur as a result of nerve damage, but commonly anaesthesia is deliberately induced, usually with drugs, to enable a patient to have an operation without feeling pain.

Anaphylaxis. A sudden and severe reaction to inoculations, insect stings, injections, or certain drugs.

Aneurysm. Abnormal weakening of the wall of a blood vessel. It may be a CONGENITAL DEFECT, or due to injury, infection or ARTERIOSCLEROSIS.

Angina Pectoria. Spasmodic pain in the chest, and sometimes in the upper arms and neck, which is a symptom of heart disease.

Anthrax. A dangerous bacterial disease of sheep, cattle and other animals which can be contracted by man through handling infected animals, or their hides or carcases.

Antibiotics. A group of chemicals produced naturally by a number of fungi, bacteria and moulds which are widely used in medicine to treat bacterial infections.

Antibody, Antigen. The two major elements involved when the body is invaded by disease. An antibody is a form of the protein gamma GLOBULIN found in the blood serum. It is produced by the body as a defence against a foreign substance called an antigen, usually a protein, such as a bacterium or an alien blood cell.

Antihistamine. A drug used to treat the symptoms of an ALLERGY. It can also help to alleviate travel sickness and colds.

Antitoxin. A type of ANTIBODY that neutralises a poison (toxin) by combining with it.

Aorta. The largest artery in the body. It carries oxygenated blood from the left ventricle of the heart and distributes it to most other parts of the body.

Aphrodisiac. A substance thought to enhance sexual desire. The word is derived from Aphrodite, the Greek goddess of love.

Apoplexy. The condition generally known as a stroke. It is due to a rupture in the wall of a blood vessel in the brain (CEREBRAL HAEMORRHAGE) or to obstruction of the brain's circulation by a blood clot (THROMBOSIS).

Appendix. A hollow, blind-ended tube about 10 cm. (4 in.) long, branching off the caecum (part of the large intestine) and situated in the lower right part of the abdomen.

Arm. Accurately, the upper limb from the shoulder to the elbow; but the arm is commonly taken to include the forearm from the elbow to the wrist.

Arteriosclerosis. A chronic disease in which the arteries become progressively narrower and less flexible as the individual ages.

Artery. A blood vessel that carries blood away from the heart to the body tissues. With the exception of the pulmonary artery, which supplies the lungs, all arteries contain blood that is rich in oxygen.

Arthritis. Inflammation of a joint. The term covers a group of diseases, the most widespread of which are osteoarthritis and rheumatoid arthritis.

Asphyxia. Unconsciousness due to interference with the breathing, which results in a lack of oxygen in the blood.

Asthma. A disease of the bronchial tubes characterised by recurrent attacks of wheezing, breathlessness and coughing.

Astigmatism. A defect in the surface curvature of the eye, which prevents light from being focused properly. Vision is distorted or blurred

Autonomic nervous system. The part of the NERVOUS SYSTEM controlling the body's automatic functions, such as breathing and heart beat

B

Bacterial Disease. Disease caused by harmful bacteria (commonly called pathogenic bacteria or germs).

Balance. The perception and maintenance of the body's position in relation to its surroundings.

Basal metabolic rate. The rate at which the body consumes energy to maintain vital functions, such

AIDS IS SPREADING

AIDS — Acquired Immune Deficiency Syndrome — is spreading far beyond the borders of the U.S. where it was discovered six years ago. It claimed its first victim in India on June 9, 1986.

According to experts participating in a conference on AIDS held in Paris in June 1986, there will be 3,00,000 new cases of AIDS in 1991 alone if the virus spreads in the rest of the world as it has in the U.S. In the U.S. 74,000 new AIDS cases were forecast for the same year. It was estimated that by then more than a quarter of a million Americans would have caught the disease and 1,79,000 would have died. The U.S. hospital bill for AIDS for 1991 is forecast to be dollars 8 billion (about Rs. 10,000 crore.)

France is the worst affected European country and had recorded about 700 cases by the first quarter of 1986. West Germany is next with 457, Britain third with 340 and Italy fourth with 219.

AIDS is a specific clinical entity associated with infection by a virus, a retrovirus called HTLV-III (Human T-Lymphotrophic Virus Type-III) or LAV (Lymphadenopathy — Associated Virus) or ARV (AIDS—Related Virus) depending upon the manner in which the virus was isolated by various research groups. Late last year the International Committee on Taxonomy of Viruses collectively named it Human Immuno deficiency Virus (HIV).

Network of Reference/Surveillance Centres for AIDS in India

City	Institution	Territory
Chandigarh	Postgraduate Institute of Medical Education and Research	Punjab, Haryana and
Srinagar	Sheri-I-Kashmir Institute of Medical Sciences	Jammu and Kashmir
Delhi	Departments of Clinical Immunology* and Microbiology*	
	All India Institute of Medical Sciences	Delhi
	National Institute of Communicable Diseases	
Simla	Medical College	Himachal Pradesh
Lucknow	KG Medical College	Uttar Pradesh
Patna	Rajendra Memorial Research Inst of Med Sciences*	Bihar
Ahmedabad	BJ Medical College	Gujarat
Calcutta	National Institute of Cholera & Enteric Diseases*	West Bengal, Sikkim
	School of Tropical Medicine	Andaman & Nicobar
Gauhati	Medical College	Assam
Imphal	Regional Medical College	Manipur, Tripura, Meghalaya, Nagaland, Arunachal, Mizoram
Bhubaneswar	Regional Medical Centre*	
Cuttack	Medical College	Orissa
Jabalpur	Regional Medical Research Centre	
Bhopal	Gandhi Medical College	Madhya Pradesh
Bombay	Seth GS Medical College	
Pune	National Institute of Virology*	Maharashtra
Nagpur	Government Medical College	
Panaji	Goa Medical College	Goa, Daman, Diu, Dadra Nagar Haveli
Trivandrum	Medical College	Kerala, Laccadives
Madras	Madras Medical College*	
Vellore	Christian Medical College*	
Madurai	Madurai Medical College	Tamil Nadu
Pondicherry	Jawaharlal Institute of Postgraduate Medical Education and Research	Pondicherry, Mahe Karaikal
Hyderabad	Osmania Medical College	
Vishakhapatnam	Andhra Medical College	Andhra Pradesh
Bangalore	Bangalore Medical College	Karnataka
Belgaum	Medical College	
Jaipur	SMS Medical College	Rajasthan

**Centres already established*

as breathing, circulation and essential chemical activities.

Bends. A painful and often crippling condition that occurs when a person returns too quickly from a high-pressure atmosphere to one of lower pressure, as when a deep-sea diver returns too quickly to the surface.

Beri-Beri. A deficiency disease caused by a lack of vitamin B_1 (thiamine) in the diet.

Biceps. Any muscle in which two separate masses of muscle fibres operate through a single tendon.

Bile. A bitter yellow-green fluid that assists in the digestion and absorption of fats and helps to neutralise the stomach acids once they reach the intestines.

Birthmark. A patch or swelling on the skin that is present at birth, also known as a naevus. It may be a pigmented area (mole) or a blood-vessel birthmark (haemangioma).

Bladder. A hollow organ with muscular walls that stores urine before it is excreted.

Blister. A bubble of fluid in the skin, usually caused by rubbing or burning.

Blood. The body's transport system—a fluid which carries oxygen and essential nourishment along the arteries to every living tissue in the body, removing through the veins carbon dioxide and waste products of metabolism such as urea.

Blood Groups. Blood can be classified in four main groups: A, B, AB and O. The group to which a person's blood belongs depends on the presence or absence of factors A and B in the red cells, and the presence or absence of factors anti A and anti B in the SERUM.

Blood Pressure. The pressure exerted by the blood on the arterial walls. It is determined by the power of the heart's pumping action and the resistance of the smaller blood vessels.

Blood Transfusion. The injection of blood from one person, the donor, into the circulatory system of another.

Blue baby. A baby whose skin and lips have a bluish tinge because of an inborn heart defect.

Boil. A tender, pus-filled swelling of the skin caused by bacterial infection, usually staphylococcus germs.

Botulism: A form of food poisoning caused by a toxin produced by bacteria.

Brain. The centre of the nervous system and the co-ordinator of all the body's conscious and unconscious activities.

Breast. The mammary or milk-producing organ of women. The breasts develop during puberty in response to the stimulus of hormones.

Bronchitis. Inflammation of the bronchi, the tubes leading from the trachea to each lung.

Brucellosis. A common disease of cattle caused by the bacterium **Brucella** which can be passed on to man by contact with an infected animal or its carcase, or by drinking infected milk.

Bruise. A swelling or surface discoloration of the skin, also known as a contusion, which results from a blow or pressure.

Bunion. A painful deformity of the big toe in which the toe is twisted so that the nail faces sideways.

Burns and scalds. Death or injury to the body tissues caused by heat — burns — are from dry heat, scalds from moist heat.

Bursa. A small fluid-filled pouch found in parts of the body exposed to pressure or friction.

C

Caecum. The first part of the large intestine.

Callus. A hard, thickened area of skin which develops where there is regular pressure or friction — for example, on the palms of the hand or soles of the feet.

Cancer. Any of a group of diseases, caused by the uncontrollable, abnormal multiplication of cells. Cancer may affect any tissue, including the blood, when it is known as leukaemia. If it occurs in the skin or mucous membranes the growth is described as a carcinoma; a sarcoma is cancer of CONNECTIVE TISSUE, including bones and muscles.

Capillary. A minute thin-walled blood vessel.

Carbohydrate. A chemical compound of carbon, hydrogen and oxygen which forms one of the main constituents of food.

Carbon monoxide poisoning. The poisoning of tissues through inhalation of carbon monoxide, a gas commonly produced by car exhausts and poorly ventilated coke fires.

Carbuncle. A painful, pus-filled infection of the skin usually caused by the bacterium **Staphylococcus aureus.**

Carcinoma. See Cancer.

Caries. Decay of a tooth or a bone. Dental caries is one of the commonest human diseases.

Carpus. A group of eight small bones that form the wrist.

Cartilage. Flexible, white CONNECTIVE TISSUE, which lines the joints of the body and forms the stiffening in the ears, nose tip, and the larynx.

Cerebellum. The area of the brain which co-ordinatesthe body's movements.

Cerebral haemorrhage. Bleeding inside the brain from a broken blood vessel. The rupture deprives an area of brain tissue of its blood supply causing permanent damage.

Cerebrum. The largest part of the brain composed of two similar sized cerebral hemispheres, left and right.

Cervix. The neck of the WOMB which projects into the upper part of the vagina.

Chagas's disease. A type of SLEEPING SICKNESS that occurs in Central and South America.

Chest. The part of the body between the neck and the abdomen.

Chicken pox. An acute infectous disease, common in childhood. Chicken pox, or varicella, is caused by a virus and is highly contagious, producing skin eruptions that start as red marks and develop into blisters.

Cholera. An acute infectious disease caused by the baterium **Vibrio cholerae.**

Cholesterol. A substance present in the blood and body tissues, as well as in many foods.

Chorea. Involuntary, muscular twitching movements which, in severe cases, may affect all muscles except those moving the eyes.

Chronic. As a description of a disease, chronic means that the condition lasts for a long time and changes only slowly.

Cimetidi. A recently developed drug used to treat peptic ULCERS.

Cirrhosis. A chronic disease of the liver in which liver cells are progressively destroyed and replaced by fibrous or fatty tissue.

Clavicle. The collar bone which connects the shoulder blade to the breastbone and helps to support the arm.

Cleft palate. A CONGENITAL DEFECT in which the two sides of the palate fail to grow together, producing a split in the roof of the mouth.

Clitoris. A small mass of sensitive erectile tissue in women, located at the top of the VULVA.

Clomiphene. See Fertility Drugs.

Cold. See COMMON COLD.

Colic. Severe intermittent abdominal pain caused by muscular spasms in one of the tubes in the abdomen.

Colon. The lower part of the digestive tract comprising a muscular tube about 1.5 m (4 ft 6 in.).

Coma. A state of deep, impenetrable, unconsciousness that may be caused by disease.

Common Cold. An infectious disease of the respiratory system, particularly the nose, throat and bronchi. A large number of viruses are known to cause colds, and new cold causing viruses continue to be discovered.

Congenital defect. Any abnormal condition that exists at birth.

Conjunctiva. The moist membrane that covers the eyeball and lines the eyelids.

Connective tissue. The TISSUE that forms the fibrous supporting skeleton of the organs of the body.

Contraception. The prevention of conception, or pregnancy

Corn. A painful thickening of the skin on or between the toes, usually the result of pressure from poorly fitting shoes.

Cornea. The transparent covering through which light enters the eyeball.

Coronary heart disease. Narrowing or blockage of the coronary arteries, which supply blood to the heart muscle

Corticosteroids. A group of hormones produced by the cortex of the adrenal glands.

Cot death. Unexpected death of an infant at home, often in the cot at night.

Cough. A sudden, explosive expulsion of air from the air passage, which occurs as a reflex response to an irritant or a blockage in the windpipe or bronchial tubes.

Cramp. A spasmodic, painful contraction of a muscle, often occurring as a result of excessive exercise.

Cranial nerve. Any of the 12 pairs of nerves that connect directly and independently, with the brain.

Cranium. Another name for the skull, the group of bones which interlock to form the framework of the head.

Cretinism. A congenital condition of arrested development.

Cryosurgery. A technique used in SURGERY in which tissue is destroyed by applying extremely low temperature.

Cushing's syndrome. A group of symptoms caused by an excess of cortisol and other adrenal hormones in the body.

Cuticle. The protective layer of the skin, also known as the epidermis.

Cyst. A closed sac filled with liquid or semi-solid matter which forms a lump in organs, tissue or body cavities.

Cystitis. Inflammation of the urinary bladder, usually marked by an urge to pass urine frequently and by a painful burning sensation during urination.

D

Dandruff. A condition in which small flakes of dead skin accumulate in the hair.

Deafness. There are two types of deafness: conductive deafness and nerve deafness. The first type occurs when something goes wrong with the passage of sound waves in the ear. Nerve deafness results from damage to the auditory nerves, which may arise from a tumour haemorrhage, or injury in the skull.

Death. The usual definition of death is the absence of essential activity in the brain for several hours.

Deficiency disease. A condition caused by an inadequate intake of essential foods in particular vitamins and minerals.

Delirium. Acute mental disturbance in which confusion, disordered speech, excitement and restlessness occur, sometimes with hallucinations.

Dementia. Loss or impairment of mental capacity, often associated with emotional or behavioural disturbances, that usually develops gradually.

Dermatitis. Inflammation of the skin. Dermatitis can have many causes including, for example, ALLERGY, bacterial infection, chemical irritants or skin disease.

Diabetes. A disorder in which the body cannot control the use of sugars as an energy source. It occurs when insufficient quantities of the hormone INSULIN are produced by the pancreas.

Diaphragm. A muscular partition which separates the chest and the abdomen, and plays an essential part in breathing.

Diarrhoea. Frequent and excessive discharge of watery faeces from the bowel.

Diastole. The regular relaxation of the heart after each contraction, or SYSTOLE.

Digestion. The breakdown of food in the digestive tract into simpler elements so that it can be absorbed into the bloodstream and used for energy, repair of tissues, and growth.

Diphtheria. An acute infectious disease caused by a bacterium.

Diverticular disease. A defect in the large intestine, or colon, in which pouches of the inside lining are forced out through the muscular layers of the wall.

Dropsy. See Oedema.

Drugs. Any chemical compound used to treat or prevent disease, relieve symptoms, or help in diagnosis.

Dumbness. Loss of speech. This may be the result of disorder of the brain (aphasia) or of the nerves supplying the larynx (aphonia).

Duodenum. The first 25 cm. (10 in.) of the small intestine.

Dwarfism. A condition of seriously retarded or stunted growth.

Dysentery. A serious infection of the intestinal tract that produces frequent attacks of diarrhoea, with blood and mucus in the stools.

E

Ear. As well as being the organ of hearing, the ear is also concerned with balance.

Eczema. A red, itchy skin rash, often accompanied by blisters.

Elbow. The hinged joint between the humerus (upper arm bone) and the radius and ulna (forearm bones).

Electrocardiogram. A tracing of the electrical activity in the heart. An electrocardiogram (ECG) is made by a machine called electrocardiograph.

Electroencephalogram. A tracing of the electrical activity in the brain. An electroencephalogram (EEG) is made by a machine called electroencephalograph.

Embolism. Blockage of a blood vessel by material (an embolus) that has come from elsewhere in the body.

Emphysema. A disease of middle or old age in which the lung's alveoli, or air sacs, are enlarged.

Encephalitis. An acute inflammation of the brain occurring in various forms and caused by a dozen or so different viruses.

Endemic disease. A disease that persists in a particular area or among a particular population group.

Endocrine gland. A gland, sometimes known as a ductless gland, that secretes a HORMONE directly into the blood.

Endogenous opioids. A group of recently discovered naturally occurring 'chemical messengers' (peptides) in the brain which when released at the nerve synapse appears to have a pain-killing effect.

Endothelium. A MEMBRANE that lines body cavities and blood and lymph vessels.

Cancer Detection

Early detection of cancer is the most effective way of fighting it. American Cancer Society recommends the following time table:-

1. *For women between 20 and 65 (and those under 20 who are sexually active), the Pap test for cervical cancer may be done once every three years (after two negative tests a year apart).*

2. *Women should have breast X rays, once between 35 and 40 to establish a reference, then at the advice of a physician until 50, and every year after 50. Women should continue to give themselves breast examinations each month.*

3. *As Lung Cancer is still so resistant to cure, early detection by annual chest X rays or Sputum Cytology, an analysis of lung cells contained in sputum, is useless. Rather prevention, especially by avoiding smoking, is advised.*

4. *Examination of the rectum and colon with a sigmoidoscope, is suggested every three to five years (after two negative tests a year apart) for people over 40.*

5. *Annual guaiac slide tests on stool to detect intestinal bleeding should be done from ages 40 to 50.*

6. *General checkup for cancer, including physical examination of the breasts and pelvis, testicles and prostate, thyroid, lymph nodes, mouth and skin, is suggested once every three years between ages 20 and 40, and annually thereafter.*

(Source: TIME.)

Epidemic. An outbreak of infectious disease that affects many people at the same time.

Epidermis. The outermost layer of the skin.

Epiglottis. A flap of fibrous cartilage at the opening of the LARYNX (the glottis).

Epilepsy. A periodic loss of consciousness, sometimes accompanied by convulsive fits, caused by sudden, excessive discharges of electrical energy in brain cells.

Episiotomy. An incision in the skin and superficial muscle of a woman's perineum during childbirth.

Epithelium. The layer of cells that covers the

external and internal surfaces of the body.
Ergotism. A condition resulting from an overdose of ergot, a drug used to contract the muscles of the womb after childbirth.
Erysipelas. A painful, highly infectious skin disease, characterised by dark red, patchy inflammation.
Erythema. Unusual redness of the skin caused by a collection of blood in the small surface vessels (capillaries) of the skin.
Erythrocyte. A red bloodcell which owes its colour to the HAEMOGLOBIN.
Excretion. The elimination of waste matter from the body.
Exophthalmos. Abnormal protrusion of the eyeball, sometimes the result of a tumour or an infection.
Eye. Light reflected from objects enters the eyes and stimulates nerves which feed the brain with information it interprets as visual images.

F

Faeces. Residue of food together with bacteria, cells from the intestinal lining, and secretions (mainly from the liver) which is discharged from the bowels.
Fallopian tubes. Two muscular tubes, or oviducts, one in each side of the female abdomen, which conduct ova (eggs) from the ovaries to the womb.
Fat. An essential food, either animal (saturated fat) or vegetable (unsaturated) in origin.
Femur. The thighbone. The entire weight of the upper part of a person's body is borne by the two femora, which are the largest, longest, and strongest bones in the body.
Fertility drugs. Term describing therapeutic substances which stimulate ovulation in women whose infertility is due to a malfunction in the reproductive system
Fever. Abnormal increase in body temperature. It is usually caused by a bacterial or viral infection, and is the body's natural reaction to an invasion.
Fibula. The more slender of the two long bones of the lower leg.
Filariasis. Tropical disease caused by the presence of parasitic filariae, or thread worms.
Fistula. An abnormal passage joining two hollow organs, or leading from an organ to the surface.
Fit. Term usually used to describe a convulsion. It is also sometimes applied to EPILEPSY or hysteria.
Flatulence. Condition in which air or gas (flatus) accumulates in the stomach or intestines.
Flouride. A compound of the chemical element fluorine and another element such as potassium or sodium.
Foetus. An unborn baby two months or more after conception.
Follicle. A minute cavity or sac found in many parts of the body.
Fontanelle. A soft area of cartilage on a baby's head where the skull bones have not joined.
Foot. The foot contains 26 bones and 33 joints, held together by more than 100 ligaments.
Fracture. A break in a bone. There are two main types of fracture: a simple fracture when the skin is not broken and the surrounding tissues are not damaged, and a compound or open fracture when the tissues and skin are both damaged.
Freckle. A brown skin spot commonly found on the face and arms in fair complexioned people.
Frostbite. Damage to skin and tissues caused by prolonged exposure to low temperatures.
Fungus disease. Disease caused by fungi growing in the tissues of the body.

G

Gall bladder. A pear-shaped reservoir (7.5-10 cm. (3-4 in.) long, in which BILE secreted by the liver is stored before being passed to the intestines by the bile duct.
Ganglion. A group of nerve cells which act as a relay centre for interconnecting nerve fibres.
Gangrene. Death of tissues due to a lack of oxygen in the cells, commonly caused by the blood supply having ceased.
Gastric juice. A juice that is secreted by the many small glandular cells which line in the stomach.
Gastro-enteritis. Inflammation of the lining of the stomach and intestines. Symptoms include fever, diarrhoea and vomiting.
Genetic counselling. See Hereditary Diseases.
German measles. See Rubella.
Gigantism. Overgrowth of the long bones of the arms and legs before adulthood.
Gingivitis. Inflammation of the gum ' that manufactures chemical compounds essential to the body's functioning.
Glandular fever. See Mononucleosis.
Glaucoma. A disorder of the eyes caused by an increase in the pressure of the fluid in the eyeballs.
Globulin. A large, complex protein molecule that is a constituent of blood.
Goitre. Abnormal swelling of the thyroid gland. This gland, situated in the front of the neck, controls the body's chemical process or metabolism.
Gonads. The reproductive glands - OVARIES in the female and TESTES in the male.
Gonorrhoea. A venereal disease caused by the gonococcus bacterium.
Gout. A disease caused by the production of excessive amounts of uric acid in the body due to a disorder in the body's chemical processes.
Growth. The process of enlargement that takes place from conception until the age at which the individual reaches physical maturity.

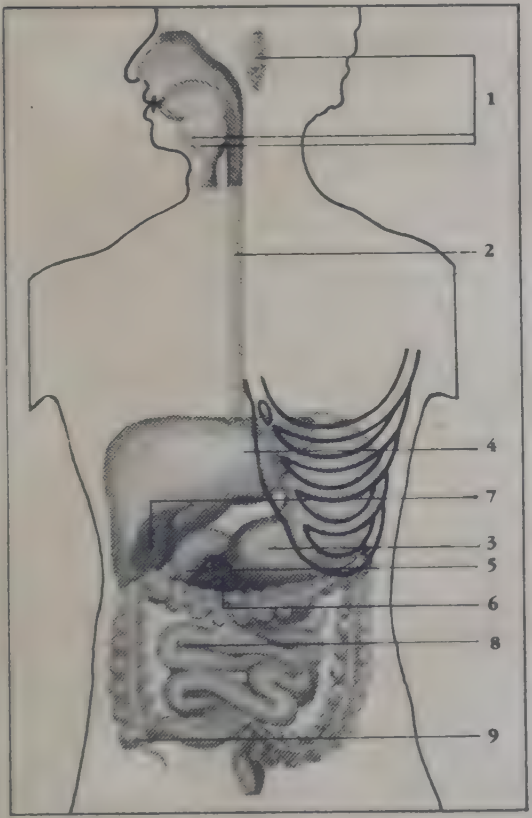
H

Haemoglobin: A compound of protein and iron in the red cells which gives blood its colour and which carries the oxygen from the lungs to the body tissues, returning with the waste product carbon dioxide.
Haemophilia: An inherited disease in which the blood clots abnormally slowly.

HOW FOOD IS DIGESTED

Within a few minutes of being swallowed, some of the food has been propelled into the first part of the intestine, which is called the duodenum, and the stomach is normally empty within two to three hours of a meal.

The average time taken for digestion to be completed in the small intestine is approximately 12 hours. Food is propelled through the intestines by a regular series of muscular contractions, or peristaltic waves, which squeeze the intestinal contents like toothpaste in a tube.



1. **Salivary glands:** Located in cheeks, under tongue and in lower jaw, these produce saliva, a digestive juice which helps to lubricate food and break it down to simple sugars.
2. **Oesophagus:** A muscular tube which carries food from throat to stomach. It is closed at each end by a sphincter, or ring of muscle.
3. Stomach: A storage place in which food is churned, and where the digestive process is continued by the mixture of acid and peptic enzymes secreted by glands in the stomach lining. Stomach acid also destroys and bacteria that may have been swallowed with the food.
4. Liver: The products of digestion (excluding fats) are absorbed into the bloodstream and carried along the portal vein to the liver. There they are stored, or used in the synthesis of chemicals needed by the body.
5. Duodenum: The first 25-30 (10-12 in) of the small intestine, where the mixture of food and enzymes from the stomach is added to by digestive juices from pancreas, gall bladder and glands in the intestinal walls.
6. Pancreas: This produces pancreatic juice which flows into the duodenum to help digest proteins, fats and carbo-hydrates. Pancreatic juice is produced continuously, but the flow in increased by the influence of hormones released when food enters the duodenum.
7. Gall bladder: A pear-shaped sac about 10 cm (4 in) long. Situated under the liver, it stores and concentrates bile secreted by the liver. After a meal, the bile is released into the duodenum to help with digestion of fats.
8. Small intestine: A coiled muscular tube about 7 m (23 ft) long, made up of the jejunum and ileum. Here digestion is continued and the resulting products are absorbed into bloodstream.
9. Colon: A 1.4 m (4 ft. 6 in) long tube where water is absorbed to leave solid faeces - consisting of the remains of undigested food, cells shed from the intestinal lining, bile salts, and acids from the liver.

Haemorrhage: Loss of blood from the blood vessels. If the bleeding is severe and causes an adult victim to lose more than 1 litre (2 pints) of blood, shock will result.

Haemorrhoid: Enlarged vein in the wall of the ano-rectal canal (the end part of the bowel).

Hair: A filament-like structure of dead cells filled with a tough protein called keratin.

Halitosis: Persistent bad breath. It may be caused by tooth decay, by infection of the gums, tonsils, nose, sinuses or lungs, by kindey malfunction or by diseases of the stomach and intestines.

Hangover: The after-effects of drinking too much alcohol.

Hare-lip: Congenital defect of the upper lip, caused by the two sides of the face failing to unite before birth.

Hay fever: Allergic condition with symptoms resembling those of a common cold.

Headache: The brain itself is insensitive to pain, but the nerves leading from the blood vessels of the brain can produce painful sensations, and are very sensitive to pressure changes inside the skull.

Heart: Muscular organ in the chest pumping the blood to all parts of the body at an average 70 beats a minute.

Heart attack: Layman's term tor a coronary thrombosis, in which one of the arteries supplying the heart muscle becomes blocked (See Coronary Heart Disease).

Heartburn: Common term for a type of indigestion, marked by a burning sensation in the chest, in which the stomach's acid contents regurgitate into the OESOPHAGUS.

Heat Stroke: Disorder of the Body's temperature-control mechanism,' in which more heat is gained from the surroundings than is lost.

Hepatitis: Inflammation of the liver, usually as a result of virus infection, though poisonous chemicals, drugs and some other diseases can occasionally be the cause.

Hereditary disease: Any disorder produced by genes that an individual inherits from his parents.

Heredty: The principle by which inborn features of an individual are passed on to his or her offspring, and so handed down through generations of a family.

Hermaphrodite: An individual whose body contains both male and female tissue.

Hernia: A condition in which the muscle or other covering tissue surrounding an organ weakens, and a portion of the organ bulges through.

Herpes: Inflammation and blistering of the skin.

Hiccup: A spasmodic, involuntary contraction of the DIAPHRAGM.

Hip: Major weight-bearing ball-and-socket joint formed where the head or ball of the FEMUR meets the socket of the PELVIS.

Histamine: A chemical substance present in all tissues that plays a part in the body's defence mechanism and is responsible for inflammation and for the symptoms of ALLERGY.

Hives: A common name for urticaria, an allergic reaction of the skin.

HODGKIN's Disease: A cancer that affects lymph nodes, bone marrow, liver and spleen. It is named after Thomas Hodgkin (1798–1866); the English physician.

Homoeopathy: An unorthodox system of treatment based on the idea that 'like cures like'. It was founded in Germany in 1796 by Samuel Hahnemann (1755–1843).

Homoeostasis: The body's ability to maintain a stable internal balance of its various biological processes.

Hookworm disease: Serious tropical disease caused by parasitic worm, **Ancylostoma duodenale**.

Hormone: A chemical messenger that is carried around the body in minute quantities in the bloodstream.

Humerus: The bone extending from the shoulder to the elbow joint.

Hydrocephalus: Abnormal enlargement of the head, at birth, caused by an accumulation of cerebrospinal fluid in the brain cavities through a blockage of the normal circulation.

Hymen: A membrane, also called the maidenhead, at the entrance of the vagina in virgins.

Hypersensitivity: A condition in which a person reacts adversely to a substance which does not affect most people.

Hypertension: Abnormally high blood pressure. If the pressure rises persistently above normal a strain is thrown on the heart and the small blood vessels in the kidneys and the eyes are damaged.

Hypochondria: Morbid worry about health, often accompanied by a variety of symptoms that have no apparent physical cause.

Hypophysis: See PITUITARY GLAND.

Hypotension: Unusually low blood pressure. Hypotension does not necessarily indicate disease, as some people naturally have low blood pressure.

Hypothalamus: Small, grey and pink complex of nerve cells situated just below the centre of the brain.

Hypothermia: Lowering of the body temperature.

Hysterectomy: Surgical removal of the uterus (womb).

I

Iatrogenic disease: Disease caused by medical treatment for another disease.

Ileum: The lower part of the small intestine, about 3.5 m (12 ft) in length, that leads into the large intestine. Digestion of fats and carbohydrates is completed in the ileum.

Immunisation: The artificialstimulation of resistance to an infectious disease by itroducing an appropriate substance, often a mild form of the disease, into your body.

Impetigo: Skin infection, mainly on the face and limbs, particularly common in children and babies.

Incubation period: The period between infection by disease germs and the appearance of symptoms.

Infarction: The death of an area of tissue after its blood supply has been cut off by the blockage of an artery, usually the result of an embolus, or blood clot.

Infertility: The inability of a man or woman to procreate.

Inflammation: The reaction of tissues to injury, irritation or infection.

Influenza: Acute infectious disease caused by a number of different virusus

Inoculation: Intentional introduction of germs into the body (usually by injection) to produce a mild form of an infectious disease and therefore subsequent immunity against it.

Insulin: Hormone manufactured by the islets of Langerhans, a group of cells in the PANCREAS.

Interferon: A protein substance, produced by the body's cells in response to virus invasion, that inhibits the multiplication of viruses.

Iris: The round, coloured part of the eye that surrounds the pupil.

J

Jaundice: Yellowing of the skin and whites of the eyes.

Jaw: There are two jawbones. The upper one, the maxilla, is fixed and forms part of the skull; the lower bone, the mandible, is hinged to the maxilla by two indentical hinge joints.

Jejunum: middle section of the small INTESTINE.

Jet lag: Disturbance caused when the body's inbuilt 24-hour rhythm, known as the diurnal or circadian rhythm, gets out of phase with the natural rhythm of day and night.

K

Kala azar: See Leishmaniasis.

Keloid: A tough, fibrous mass of scar tissue in the skin.

Keratin: A sulphur-containing protein that makes up the body's horny tissues, such as the fingernails and the surface layer of the hair and skin.

Kidney: The organ responsible for filtering waste products from the blood.

Knee: A hinge joint in the leg where the lower end of the FEMUR meets the top of TIBIA.

Kwashiorkor: A form of malnutrition caused by severe protein deficiency, which can occur in infants, usually after weaning.

Kyphosis: Curvature of the spine, producing a hump in the upper back - hence the name hunchback to describe the victim.

L

Lacrymal gland: The tear gland, situated above and to the outer side of the eye, which produces the fluid that bathes the eyeballs and eyelids.

Lactation: Production of milk by mammary glands, or breasts.

Larynx: The voice box, situated at the root of the tongue and leading into the trachea, or windpipe.

Lead poisoning: Sources of lead poisoning, also known as plumbism, include leadbased paints, a number of industrial processes, and car fumes

Legionnaire's disease: See Pneumonia.

Leishmaniasis: A disease caused by infection with protozoa, or parasitic micro-organisms, called **Leishmania** which are transmitted by sandflies.

Leprosy: A chronic bacterial disease of the skin, nerves, muscles and bone.

Lesion: A medical term describing an abnormality in tissue - for example, a wound, ulcer or tumour.

Leucocyte: A white blood cell. Its role is to attack and digest foreign particles, including bacteria, in the blood.

Leucotomy: A surgical operation on the brain, also known as prefrontal lobotomy, in which the white nerve fibres in the fontal lobe are cut.

Leukaemia: A serious malignant disease of the blood-forming organs which results in an abnormal increase in white blood cells, many of them at a primitive stage of development.

Ligament: A band of fibrous tissue connecting bones or cartilages.

Liver: The largest gland in the body situated in the upper right part of the abdomen.

Lockjaw: See Tetanus.

Long-sightedness: Inability to focus the eyes on near objects - for instance, words when reading.

Lumbago: Pain in the lumbar region, or lower part of the back.

Lung: The two lungs are spongy air-filled organs, supplied by the bronchi leading from the windpipe.

Lupus: A chronic, destructive skin condition, which has several forms.

Lymph: A transparent, yellowish fluid which arises in the tissues and travels in the lymphatic vessels.

Lymphocyte: A variety of LEUCOCYTE, or white blood cell.

M

Malaria: A parasitic disease that causes chills, fever and chronic ill health.

Malnutrition: Poor nourishment of the body caused by lack of an essential item in the diet, such as protein, fat, carbohydrate or a vitamin.

Mastoid: Term, meaning, breast-shaped, usually applied to the mastoic process, a nipple-shaped bony protuberance of the temporal bone behind the ear.

Measles: Contagious virus disease causing a skin rash, fever, cold-like symptoms, and sometimes complications such as pneumonia.

Melanin: Naturally occurring dark pigment, colouring various parts of the body such as the hair, the iris of the eye, and the skin.

Membrane: Thin layer of tissue that covers a body surface, divides a space or organ in the body, or lines a body cavity.

Meningitis: Inflammation of the meninges - the membranes that cover brain and spinal cord.

Menopause: The 'change of life', or climacteric, when a women's menstrual cycle becomes irregular and then stops altogether.

Menstruation: Normal periodic bleeding from the womb in women of child-bearing age.

Metabolism: The chemical processes occurring in the body in which complex organic compounds (food) are broken down (catabolism) with the release of energy - and simple compounds are built up into tissues (anabolism) using the previously released energy. Oxyen is an essential ingredient of metabolism.

Metacarpal: One of the five long bones of the hand, between the wrist and fingers.

Metastasis: The spread of disease from one part of the body to another.

Metatarsal: One of the five long bones in the foot, joining the toes to the heel bones

Migraine: Recurrent headache, varying in duration, frequency and severity, and sometimes preceded by aura, or warning signs, such as blurred vision

Mole: Pigmented spot in the skin. Moles are usually brown, sometimes raised, and occasionally have hair growing from them.

Mongolism: A congenital defect, also called Down's syndrome, in which a child is mentally retarded and has slanted eyes, a broad, short face, weak muscles and stubby fingers.

Moniliasis: Infection caused by a fungus. The yeast-like fungus (usually **Candida albicans)** is widespread.

Mononucleosis: Infectious disease, also known as glandular fever, thought to be caused by a virus.

Motion sickness: Nausea, and sometimes vomiting, caused by motion.

Mucus: Thick, slimy liquid that lubricates mucous Membranes.

Multiple sclerosis: Disorder, usually occurring in young adults living in temperate climates, in which the linings of nerves in the brain and spinal cord are damaged.

Mumps: Acute contagious disease, usually affecting children, in which the salivary glands become inflamed and swollen.

Muscle: Tissue responsible for movement in the body. The body contains about 650 muscles made up of three types: skeletal,'visceral and cardiac (heart).

Muscular dystrophy: Wasting disease of the muscles - usually those controlling movement - thought to be predominantly hereditary in origin.

Myasthenia gravis: Chronic disorder, usually of young people, in which nerve transmissions!to the muscles are disrupted because of chemical disturbances.

Myxoedema: Disorder caused by insufficient secretion of the hormone, thyroxine by the Thyroid glands.

N

Nails: Horny plates on the upper surface of the finger and toe ends.

Narcolepsy: Abnormal inclination to fall asleep, usually due to brain damage in the Hypothalamus, the area near the front of the brain that controls the internal organs.

Narcotic: Drug that produces stupor, relieves pain, and often produces a feeling of well-being.

Nausea: Feeling of sickness usually centered on the stomach.

Necrosis: The death of the cells, tissues, or a localised portion of an organ.

Nephritis: Inflammation of the Kidneys also knows as Bright's disease which usually occurs after a streptococcal infection elsewhere in the body.

Nerve: A bundle of specialised cells called neurons which transmits minute electro-chemical impulses between the brain and spinal cord, and other parts of the body

Nervous system: The network of nerve cells that controls the body's responses to its environment and regulates its internal workings.

Neuralgia: Periodic attacks of severe pain that travel along a nerve.

Neuritis: Inflammation of a nerve or nerves, which may or may not produce pain (Neuralgia).

Nose: Organ of smell and one of the entrances to the respiratory system.

Nystagmus: Persistent involuntary movements of the eyes.

O

Obesity: Condition of being overweight due to excess accumulation of fat in the body.

Occupational disorder: Disease or disability occurring as a result of working conditions.

Oedema: Abnormal accumulation of fluid in body cavities and tissues; sometimes known as dropsy.

Oesophagus: The 24 cm (10 in) long muscular tube that carries the food from throat to the stomach.

Oestrogen: A term describing female sex hormones. Oestrogens, which are produced mainly in the ovaries, give a women her female characteristics.

Osteomyelitis: Inflammation of the bone marrow, commoner in children than in adults, caused by infection with bacteria.

Osteopathy: A system of treating disease with massage and manipulation based on the theory that ill health is chiefly due to what are called 'structural derangements of bones'.

Ovary: The female sex gland, stiuated beside the womb.

Ovulation: Release of a mature Ovum (egg cell) from the ovary. Usually one ovum is released every 28 days, at about the midpoint of the menstrual cycle.

Ovum: The scientific term for the egg cell. Each ovum is a single female reproductive cell.

P

Pacemaker: Area of special nerve tissue in the heart which sets the rate of the heart beat.

Pain: Sensation which acts as a warning system about possible injury or illness.

Palate: The roof of the mouth, the hard part of which is formed by a bony partition separating the mouth and nasal cavities.

Palsy: Paralysis or constant shaking of a part of the body.

Pancreas: A 15 cm (6 in) long gland situated behind the stomach.

Pandemic: Spread of a disease, usually an infectious one, throughout several countries.

Paralysis: Loss or impairment of power or sensation in a part or parts of the body.

Parasympathetic nervous system: A division of the autonomic nervous system. It is responsible for returning the body to normal activity after an emergency.

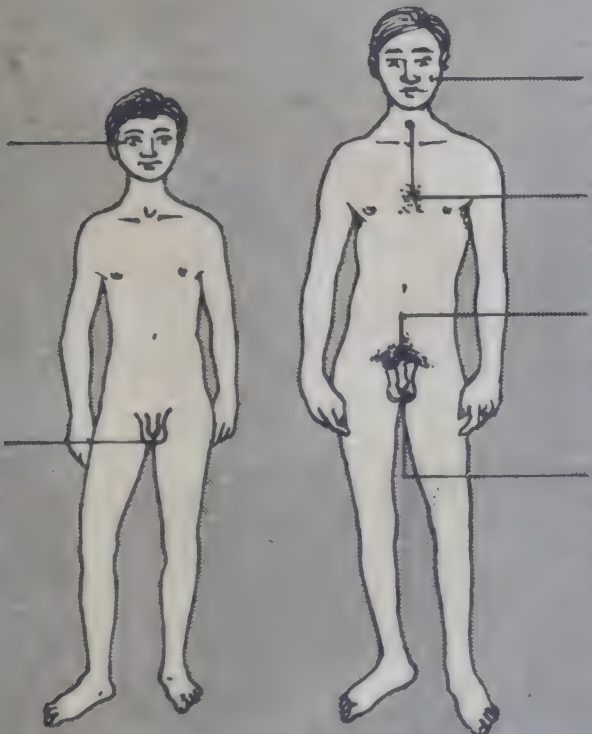
Parathyroid gland: A hormone gland that controls the body's use of calcium and phosphorus.

Parkinsonism: Chronic disease that progressively affects the area of the brain controlling voluntary movement.

HOW A CHILD GROWS INTO AN ADULT

Adolescence is the time of life between puberty and maturity, when a child develops into an adult. On average it extends from the ages of 10 to 14 in girls, and from 12 to 17 in boys, although the ages of onset and completion vary widely. The physical and emotional changes of adolescence are initiated by the release of hormones from the sex glands (testes and ovaries) into the bloodstream.

In addition to the above effects, the male hormone testosterone stimulates physical growth, and is thought to cause the aggression and daring of adolescent boys.



Pituitary gland: Stimulated by hormones from the hypothalamus, the pituitary secretes hormones which enlarge the testes.

Testes: These glands produce sperm and secrete the male sex hormone testosterone. This brings the changes of adolescence

Skin: This becomes oily, due to the activity of the sebaceous glands.

Voice: This first breaks and then deepens, as larynx and vocal cords enlarge.

Pubic hair: The beginning of the growth of pubic hair is accompanied by hair in armpits. Hair on face and chest follows later.

Reproductive organs: Penis and testes enlarge. The auxiliary sex glands (prostate and Cowper's) mature and secrete the seminal fluid in which sperm are carried.

How a girl grows: See page 179

Patch test: A test in which a substance is injected nto or placed in close contact with the skin to determine if a person is sensitive to it.

Pathogen: The scientific term for any microorganism or substance that causes disease.

Pellagra: A nutritional disorder due to lack of the vitamin nicotinic acid, one of the B group, and to deficiency in protein.

Pelvis: The bony structure linking the spine to the legs.

Penis: The male genital organ, made up of a cylindrical mass of spongy tissue encased in loosely fitting skin.

Peristalsis: A wave of contraction passing along a muscular tube such as the oesophagus, intestine or Fallopian tube.

Peritoneum: Membranous lining of the abdominal cavity which covers the stomach, intestines and other abdominal organs.

Phagocyte: Any cell that engulfs (and usually digests) microorganisms, other cells or foreign matter.

Pharynx: The cavity, above 11.5 cm (4½ in) long, between the back of the mouth and the nasal passages above, and the gullet and larynx below.

Phenylketonuria: An inherited disorder of the body's metabolism that can affect mental ability.

Phlebitis: Inflammation of vein, often accompanying thrombosis of the blood vessel.

Physiotherapy: Treatment of injury or disability with exercise, heat and massage.

Piles: See Haemorrhoids.

Pituitary gland: A small gland, also called the hypophysis, attached to the base of the brain

Placebo: An inactive, non-harmful substance given to patients to satisfy their wish to be treated.

Plague: Any epidemic disease, though usually one that has a high death rate.

Plasma: The liquid constituent of blood that comprises 55% of its volume.

Plastic surgery: See Surgery.

Platelet: A minute, colourless cell in the blood that plays a major part in its clotting.

Pleura: A moist, double Membrane that lines the inside of the chest cavity and the outside of each lung.

Pleurisy: Inflammation of the Pleura often a complication of pneumonia.

Pneumoconiosis: The formation of fibrous tissues (fibrosis) in the lungs caused by constant inhalation of dust.

Pneumonia: Acute inflammation of the lungs. Pneumonia may be caused by bacteria - usually pneumococci - or viruses.

Pneumothorax: The presence in the chest of air or gas between the pleura.

Poisoning: Some poisons are not necessarily harmful to the body in small amounts - alcohol, for example - but can have an adverse,even fatal effect if too much is taken.

Poliomyelitis: An acute virus infection of the nervous system that often causes paralysis.

Polyp, polypus: A tumour growing from the membrane of various body structures such as the nose, bladder, womb, or intestine.

Presbyopia: Difficulty in focusing on near objects.

Priapism: Painful erection of the penis. If persistent it is usually the result of thrombosis within the erectile tissue of the penis.

Prolapse: Displacement of an organ from its normal position.

Prophylaxis: The use of medicine in preventing disease, rather than curing it.

Proprioception: The ability to sense how the body is moving and the positions of the parts of the body.

Prostaglandins: Naturally occurring substances in the body which affect the nervous system, blood flow in the kidneys and the action of a number of hormones.

Prostate gland: A gland in men which surrounds the bladder neck and the urethra.

Prosthesis: Artificial replacement for a part of the body.

Protein: A complex chemical compound present in every living cell.

Psoriasis: Generally mild but persistent skin disease that commonly fluctuates in severity.

Psychosomatic: A term used to describe disorders with both mental and physical features.

Puberty: The start of adolescence. It usually occurs at the age of 10 to 12 in girls and 12 to 14 in boys.

Puerperal fever: Once a common and often fatal complication in women after child-birth.

Pulse: The two-part impulse of the heart's contraction (systole) and relaxation (diastole) transmitted along the arteries.

Pupil: The hole in the centre of the iris which controls the amount of light entering the eye

Pus: A thick yellow fluid made up of blood serum and the remains of bacteria, Phagocytes and damaged tissue, that forms when the body defends itself against bacterial invasion

Pyloric stenosis: A blockage in the pylorus (the outlet of the stomach).

Q

Q fever: A mild, infectious rickettsial disease, so called because it was first identified in Queensland, Australia.

Quatriceps: The group of four muscles in the front of the thigh. When these contract the knee is straightened.

Quarantine: Isolation of a person with a communicable disease, or of a person who has been in contact with a communicable disease, to protect others against infection.

R

Rabies: An acute, usually fatal, infectious disease of the central nervous system caused by a virus.

Radiation sickness: The effects on the body of over-exposure of high-energy radiation, such as gamma rays, nuclear radiation or X-rays.

Radius: The shorter of the two bones in the forearm, situated on the same side as the thumb.

Rash: A transient eruption of the skin comprising a red area or areas, often with many small spots.

Raynaud's disease: An arterial disease affecting the feet and hands, in which the blood supply ceases temporarily, causing numbness followed by pain. The disease was first described by a Frenchman, Maurice Raynaud (1834-81).

Reflex: An automatic reaction of the body to a stimulus.

Reproduction. See Sexual Reproduction.

Respiration: Breathing, or external respiration, is the intake and expulsion of air to and from the lungs during which oxygen is taken up by the blood and carbon dioxide waste returned to the air.

Retina: The light-sensitive zone at the back of the eye.

Rhesus (Rh) factor: A complex substance present on the surface of red blood cells in most people. People with the Rh factor are described as Rh-positive and those without Rh-negative.

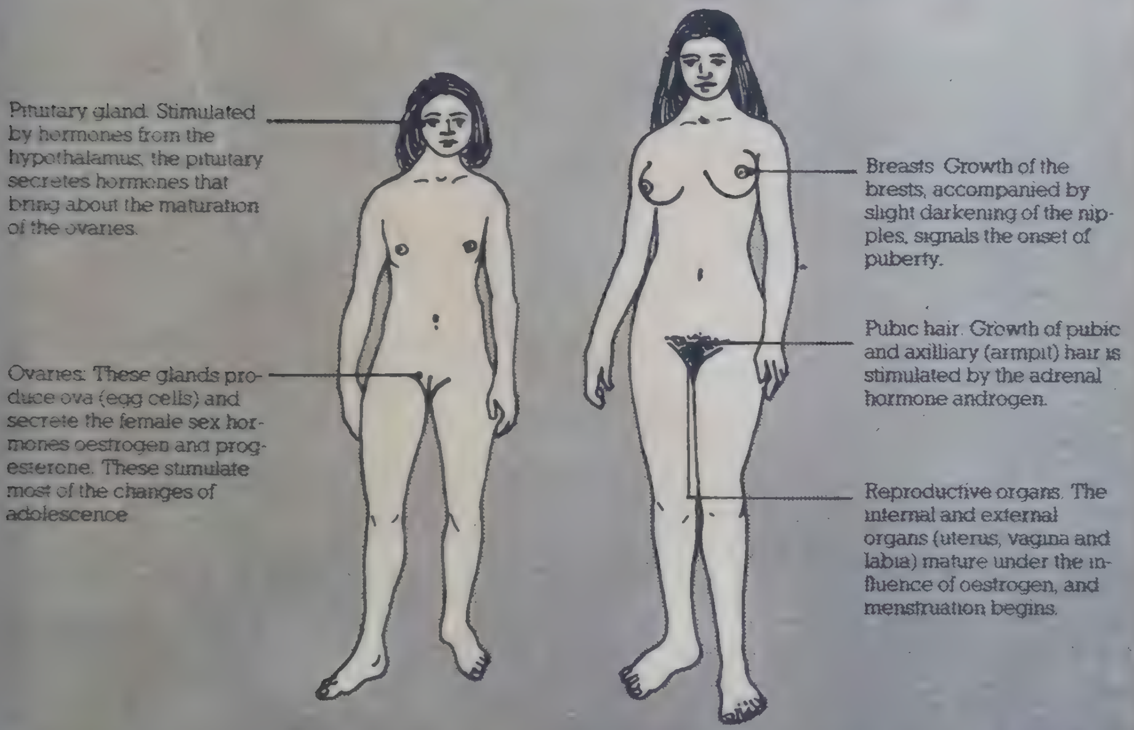
Rheumatic fever: A disease caused by toxin (poison) produced in the body by streptococcus bacteria.

Rheumatism: A term applied to disorders in which there is pain in the joints, bones and their supporting tissues.

Rheumatoid arthritis: See Arthritis.

Rhinitis: Inflammation and swelling of the mucous membranes in the nose, causing a running nose.

HOW A GIRL GROWS INTO AN ADULT


Pituitary gland. Stimulated by hormones from the hypothalamus, the pituitary secretes hormones that bring about the maturation of the ovaries.
Ovaries: These glands produce ova (egg cells) and secrete the female sex hormones oestrogen and progesterone. These stimulate most of the changes of adolescence
Breasts Growth of the brests, accompanied by slight darkening of the nipples, signals the onset of puberty.
Pubic hair. Growth of pubic and axilliary (armpit) hair is stimulated by the adrenal hormone androgen.
Reproductive organs. The internal and external organs (uterus, vagina and labia) mature under the influence of oestrogen, and menstruation begins.

The balance between oestrogens from ovaries and androgens from adrenals determines amount and distribution of body hair and amount of fat around breasts and hips.

ib: One of the curved bones that form the ramework of the chest and protect the organs in ne chest cavity.

ickets: A softening of the bones in children due to lack of vitamin D in the diet and insufficient unlight for the manufacture of the vitamin in the kin.

ickettsial diseases: Illnesses caused by a group of acteria-like micro-organisms, but of smaller size.

ingworm: A highly contagious fungus infection of ne skin, known medically as tinea.

osacea: A skin condition of unknown cause that ffects the face.

ubella: A contagious virus disease, also called erman measles, that usually occurs in periodic pidemics.

upture: A hernia, or break or tear in an organ or ssue.

S

. Anthony's fire: A common name for an inflamed kin condition once thought to be Erysipelas, but ow known to be a symptom of ergotism.

St. Vitus's dance: See Chorea.

Saliva: A mucous fluid secreted by the three pairs of salivary glands (parotid, in the cheek; sublingual, under the tongue; submandibular, below the jaw).

Salmonellosis: A variety of Food Poisoning caused by salmonella bacteria.

Sarcoma: A cancer, or malignant growth, in the body's connective tissue, such as muscle, cartilage or bone.

Scabies: A highly contagious skin disease caused by the itch mite **Sarcoptes scabiei.**

Scapula: The triangular flat bone at the back of the shoulder, commonly called the shoulder blade.

Scarlet fever: An infectious disease usually of childhood, characterised by a widespread, bright red rash accompanied by a sore throat and fever.

Sciatica: Pain in the sciatic nerves, the two largest nerves in the body which run from the lower spine to the legs.

Scoliosis: Sideways curvature of the spine.

Scrotum: The pouch of skin that hangs below the base of the penis.

Scurvy: A deficiency disease caused by a lack of vitamin C (ascorbic acid) in the diet.

Semen: A thick white fluid discharged from the penis during an ejaculation.

Semicircular canals: The organs of balance, situated in the middle ear.

Senility: Loss of mental or physical capabilities that sometimes accompanies old age.

Septicaemia: A serious condition, also known as blood poisoning, in which bacteria or other germs multiply in the blood and spread throughout the body.

Serum: The clear yellowish fluid that remains in the blood after clotting occurs.

Sex Hormones: The hormones responsible for the development of secondary sexual characteristics in adolescence and for controlling sexual activity, including ovulation.

Sexual reproduction: The procreation of new individuals to ensure continuation of the species.

Shingles: See Herpes.

Shock: A collection of signs and symptoms, known to doctors, as the shock syndrome resulting from the failure or collapse of the circulatory system.

Short-sightedness: A defect of vision also known as myopia, in which an individual has difficulty in clearly focusing on distant objects.

Shoulder: The ball-and-socket joint between the humerus (upper arm bone) and the Scapula (shoulder blade)

Hair For Baldies

Expanding scalp tissue that still has hair, a technique used in some cosmetic surgery, promises to be a breakthrough in treating baldness.

Dr. Sheldon Kabaker, a plastic surgeon in Chicago, U.S., said there was no easy solution to baldness, but the new technique "represents a significant breakthrough in enabling us to eliminate large areas of baldness where we couldn't before."

Dr. Kabaker said the surgery involves implanting balloon-like devices, called "tissue expanders", beneath the scalp to stretch skin tissue that still has hair.

After a six-to eight-week period of stretching the scalp areas with hair by gradually inflating the balloons, surgeons would remove the bald skin and stitch together the newly expanded scalp in its place. The tissue expanders are removed at the same time.

Siamese twins: Identical twins who are born joined together, generally at the head, chest or hip.

Sinus: A hollow cavity, usually in bone. The term is generally taken to refer to the four paranasal sinuses in the skull - the frontal (forehead), maxillary (cheekbones), sphenoidal (back of the nose), and ethmoidal (below and behind the frontal) sinuses.

Skeleton: The bony framework that supports the body and, with its many joints, provides the chasis to which the body's voluntary or skeletal muscles are attached.

Skin: The body's waterproof, impermeable protective covering, sometimes called the integument.

Skull: The body framework of the head. The skull, or cranium, contains the brain and holds the organs of hearing, sight, smell and taste.

Sleep: A state in which the conscious mind ceases to function.

Sleeping sickness: A widespread disease of tropical Africa, caused by minute protozoan parasites called trypanosomes.

Slipped disc: The bones of the spine (vertebrae) are separated and cushioned by a ring of cartilage with a soft centre called an intervertebral disc - there are 23 altogether.

Smallpox: Highly contagious virus disease, once a major cause of death throughout the world but now officially declared eliminated after worldwide vaccination programme by the World Heath Organisation.

Smell and taste: The organs of smell and taste work together to detect the flavour of food.

Snoring: Noisy vibration of the soft palate, usually caused by a person's sleeping with the mouth open.

Solar plexus: Term used to describe a large concentration (plexus) of nerve connections in the upper abdomen that forms part of the sympathetic nervous system.

Spastic: Term describing a condition in which the muscles are stiff and movements awkward.

Spermatozoon: The scientific name for the male reproductive cell or sperm cell.

Sphincter: A circle of muscle fibres usually situated at the entrance or exit of an organ.

Spina bifida: A birth defect in which the bones of the spinal column fail to develop properly, so that the spinal cord - the main nerve trunk of the body - is imperfectly protected.

Spinal cord: A soft, thick cord of nerve tissue about 45 cm (18in) long, running from the brain through the seven cervical and 12 thoracic vertebrae to the first lumbar vertebra.

Spleen: A pulpy, blood-filled, oblong organ situated in the upper left part of the abdominal cavity.

Sprue: A chronic disease of the small inestine, in which fats and certain vitamins are not properly absorbed by the body.

Sputum: Matter, mainly composed of mucus, produced in the lungs and air passages.

Squint: See Strabismus.

Stenosis: Constriction of a passageway, duct, or opening in the body.

Sterility: In general terms the inability to produce children.

Steroid: A group name for a large number of naturally occurring substances with a similar chemical structure.

Stomach: An organ of digestion and a storage area for food, with a normal capacity of about 1.5 litres (2½ pints) in an adult.

Strabismus: A condition in which both eyes cannot focus on the same spot at the same time, commonly termed a squint.

Stroke: Damage to the brains as a result of blockage of an artery (thrombosis) or cerebral haemorrhage.

Stye: Inflammation of the eyelid caused by infection of one or more eyelash roots or of the sebaceous glands.

Sulphonamides: A group of drugs, which, when they were introduced in the 1930's provided the first effective treatment for a number of bacterial dieases.

Sunburn: Damage to the skin by over-exposure to the sun's radiation.

Sunstroke: A severe disturbance of the body's cooling system after over-exposure to the sun.

Suppository: A small cylinder of cocoa butter or glycerine made for insertion into the rectum or vagina.

Surgery: The treatment of disease, injury or deformity by operation or manipulation, usually using some form of anaesthesia.

Sweat: The fluid secreted by the skin's sweat glands. Sweat or perspiration is more than 99% water.

Sympathetic nervous system: Part of the autonomic nervous system, which controls involuntary movements of internal organs.

Syphilis: The most dangerous of the venereal diseases, caused by a spiral-shaped bacterium (spirochaete) called **Treponema pallidum**.

Systole: The rhythmic contraction of the heart which pumps the blood through the circulation.

T

Tachycardia: Excessively rapid heart-beat - usually above 100 a minute, as compared with the normal 65.80 a minute.

Tapeworm: A parasitic worm that lives in the intestines of its host.

Teeth: Teeth grow from the maxilla and mandible (the upper and lower jawbone) and are supported by thickened parts of these bones called alveoli.

Artificial Skin

An artificial skin that not only helps prevent potentially fatal infection in wound and burn patients, but promotes faster healing and reduces scarring has been developed by a microbiologist in the U.S.

"High Technology" magazine reported in its July issue that the sticky cellophane-like skin, named Stra Cor after the natural skin layer known as the stratum corneum, is produced from two natural compounds: keratin, a major component of hair and nails, and chitosan, a starchy material found in crab shells and insect skeletons.

The magazine reported that unlike other synthetic skins which must be carefully stitched in place, Stra Cor's covering can simply be laid over the injury — even at an accident scene — providing quick protection against bacteria. Absorption of body fluids quickly softens the material so it adheres tightly to irregular shapes.

Temperature: The normal human body temperature is about 37°C (98.6°F) although for many people the normal is slightly higher or lower than this.

Tendon: Strong, elastic tissue that connects a muscle to a bone.

Testes: The two male sex glands (gonads) situated in the scrotum.

Tetanus: A serious infectious disease causing spasms of the voluntary muscles.

Tetany: Cramp or convulsions caused by a lack of calcium in the blood, which irritates nerve tissue.

Thalamus: A collection of nervous tissue consisting of two egg-shaped bodies lying deep in the brain between the two cerebral hemispheres.

Thorax: The chest, or thoracic cavity, containing the heart, lungs and oesophagus.

Thrombosis: The blockage of a blood vessel by a thrombus (blood clot).

Thrush: See moniliasis

Thymus: An endocrine gland lying beneath the breastbone near the heart.

Thyroid gland: An endocrine gland lying on either side of the windpipe below the larynx

Tibia: The shinbone, the main bone of the leg, between the knee and ankle joints.

Tic: A persistent twitching of muscles, usually those in the face.

Tinea: See Ringworm

Tinnitus: Noises in the ear, often of a ringing nature

Tissue: A group of cells of broadly similar type together with the material between the cells.

Tongue: The upper surface of the tongue has several thousand taste buds, made up of clusters of nerve endings which can detect four different tastes: sweet, sour, salt and bitter.

Tonsillitis: Inflammation of the tonsils. Tonsillitis is a symptom of several infectious diseases ranging from the sore throat of a cold to Diphtheria.

Tonsils: Two flat glands of lymphatic tissue at the back of the throat.

Toxaemia: The medical term for the presence of any poisonous material in the circulating blood.

Toxin: A poisonous substance produced in the body by bacteria, such as staphylococci or diphtheria.

Toxoid: A toxin which, having been treated to neutralise its dangerous effect, still retains the capacity to stimulate the body to produce anti bodies (See antibody, antigen).

Trachea: The windpipe; a cartilaginous tube that extends about 23 cm (9 in) from the Larynx before dividing into the left and right bronchi.

Trachoma: An infectious virus disease, widespread in the tropics, which first affects.

Transplant Surgery: The replacement of diseased or injured organs or tissues by healthy ones.

Trauma: An injury or wound. There are two types of trauma: physical, such as a bruise, cut or fracture; and emotional when a shock may make a profund impression on the mind.

Trichinosis: A parasitic disease caused by a small roundworm, usually caught by eating uncooked pork.

Trichomonas Vaginalis: A protozoan parasite sometimes found in the vagina which may cause inflammation and discharge.

Tuberculosis: An infectious disease caused by the bacterium Mycobacterium tuberculosis.

Tumour: A swelling on or in the body. Some tumours are simply due to an accumulation of fluid. Other tumours are due to an abnormal growth of cells.

Typhoid fever: A serious, sometimes fatal, infectious disease caused by a variety of salmonella bacteria.

Typhus: A group of infectious diseases caused by Rickettsiae micro-organisms (see Rickettsial Diseases).

U

Ulcer: An inflamed, open sore on the skin or on the mucous membrane lining a body cavity.

Ulna: The larger of the two bones in the forearm.

Ultrasonography: The location, identification and measurement of deep structures in the body by measuring the reflection or transmission of high-frequency sound waves (ultrasound).

Umbilical cord: Structure which connects the foetus to the placenta in the mother's womb.

Uraemia: Poisoning of the blood resulting from the presence of waste products that are normally filtered off by the kidneys and excreted in the urine.

Ureter: One of the two muscular tubes that carry urine from the kidneys to the bladder.

Urethra: The tube through which urine leaves the bladder and is discharged from the body.

Urine: A yellowish liquid produced in the kidneys. Mainly composed of water, the urine also contains the body's waste products filtered from the blood by the kidneys.

Urogenital system: The reproductive and urinary systems.

V

Vaccination: The introduction of a vaccine into the body to produce immunity to an infectious disease, such as smallpox.

Vagina: Muscular passage, lined with mucous membrane, that extends 10-12 cm (4-5 in) from the vulva, or female external genital organs, to the cervix, or neck of the womb.

Varicose vein: Dilated and knotted blood vessel near the skin surface, usually occurring in the leg.

Vas Deferens: The tube along which spermatozoa travel from the testes to the urethra in the penis.

Vein: Blood vessel that returns blood to the heart from all areas of the body.

Vena Cava: The body's main vein, returning blood from all over the body to the right auricle of the heart.

Venereal disease: Disease transmitted by sexual contact.

Verruca: Medical term for a wart, a small growth formed on the skin and caused by a virus.

Vertebra: One of the 33 bones of the spine.

Vertigo: Severe dizziness, in which the sufferer may feel that he is being whirled about.

Virus disease: Disease caused by any of a great variety of very small, living particles.

Vitamins: A group of unrelated organic substances essential in minute quantities for the normal functioning of the body's chemical processes.

Vulva: The external female genital organ. It surrounds the opening of the vagina, which in virgins is usually partly covered by a thin membrane, the hymen.

W

Wart: See Verruca.

Whitlow: An inflammation, not usually serious of the tissues round the base of a fingernail or toenail, known medically as paronychia.

Whooping cough: An acute, contagious infection of the upper respiratory passages and bronchial tubes.

Womb: Hollow, muscular, pear-shaped organ in the pelvis of a woman in which during pregnancy, the growing foetus is protected and nourished until birth.

X

Xerophthalmia: An eye disease caused by a lack of vitamin A in the diet.

X-rays: A type of radiation similar to radio waves or light rays. X-rays have very short wavelengths, can penetrate soft tissues and, though invisible, can register on photographic film.

Y

Yaws: Disease caused by spirochaete bacteria.

Yellow fever: A virus disease transmitted by forest-living mosquitoes in parts of Africa and South America.

BODY REPAIR IN 2000

Like a repaired car, the human body of 2000 wil be made up of replaceable parts. Heart, lungs, kidney, pancreas, blood vessels, ears and may be eyes will commonly be replaced.

It looks like an ordinary microchip, but it may have a life of its own. Someday it could end up inside somebody's brain.

Scientists from the U.S. National Institute of Mental Health are growing animal tissue on a silicon chip in the hope that the two eventually will connect and begin to interact. Sometime, probably well into the next century, microchips may be implanted in human brains, where they will link up with undamaged nerve cells and take over functions destroyed by injury or disease.

Aging Process. Other medical scientists are wrestling with an age-old question: Can human life be significantly prolonged?

Researchers on aging say that if cancer and herat ailments magically disappeared, the average life span would increase by only a few years. These scientists are trying to retard the aging process itself, extending the years of robust health toward 100.

One theory is that aging is caused by the buildup of metabolism's toxic byproducts and could be slowed by boosting the body's protective enzymes.

A formula for extended youth may never be found. But by 2000, many of the human body's remaining secrets will have been unlocked. New discoveries are occuring almost daily, especially in molecular biology — the study of the body's functions at the basic genetic level. The advances will make today's medicine look primitive.

Scanning. Technology, some of it extremely costly to operate, will produce unprecedented tools for diagnosing and treating disease. Now body scanners, especially the magnetic resonance imager, will produce photograph-like pictures that reveal far more than today's CAT scanners, without using radiation.

Tiny pumps implanted in the body will take over for ailing organs, shooting out insulin for a malfunctioning pancreas, for example. Lasers will take over most work now done by scalpels, perhaps even making coronary bypass surgery obsolete.

Robots will work alongside some surgeons "For certain functions, robots will be more accurate than people, and they'll take care of repetitive tasks too, such as suction and retraction," says Dr. Donlin Long, chairman of neurosurgery at the Johns Hopkins University Medical School.

Teleradiology will convert future accident victims' X-rays to digits and send them by telephone to specialists for instant analysis. Doctors will turn to computer terminals, not musty reference books, for guidance on symptoms, treatments and prescriptions. One futurist predicts that within 50 years, many doctors will be replaced by technicians operating well-programmed computers.

Meanwhile, health specialists say, more physicians will cease being repairmen. By 2000, people may spend as much time and money on prevention of illness as on treatment, and look to changes in lifestyle, not technology, for their well-being.

"We have it within ourselves to control [illegible] cardiac destiny," says Dr. Robert I. Lev [illegible] Columbia University. He believes that education about smoking and diet, especially cholesterol, will help bring heart disease down.

Cloning Drugs. A new generation of drugs will aim at preventing and curing

Flu Vaccine: Soviet Claim

Soviet scientists have succeeded in obtaining the world's first universal synthetic grippe (influenza) vaccine which, after being tested on animals, was now being tried in clinical conditions.

Prof. Rahim Khaitov, author of the new preparation and deputy director of the Moscow institute of immunology, said as the grippe virus constantly changed, earlier vaccines, while successfully combating one kind of virus, were found ineffective against the other kind.

The solution was found by locating the virus's most vulnerable place that turned out to be a tiny albuminous section in its tunic which remained intact in all mutations and did not cause immunity, he said.

Prof. Khaitov said subsequent experiments were directed at making in an immunogen in order to throw against it the organism's defensive forces — anti-bodies produced by lymph cells.

The aim was reached, "when we stuck the virus's immunity-proof albumin to a molecule of a polymer which is known as a stimulant for lymph cells." Later, a preparation consisting wholly of artificial molecules was obtained, Prof. Khaitov said.

disease rather than treating symptoms. Made more by biologists and computer scientists than chemists, these drugs will be cloned from the body's own genes, hormones, and enzymes and will mimic nature to cure ills. The next century also will see a new wave of vaccines to prevent such illnesses as chickenpox, malaria and hepatitis — and even tooth decay.

Viruses, which cause a range of illness including the common cold, herpes, and AIDS, will remain a challenge.

Areas of medical research with great significance for the future include:

The Brain. "As heart disease and cancer become more treatable, the major health problem over the next 50 years will be degenerative diseases of the brain," says Dr. Richard Jed Wyatt, chief of neuropsychiatry at the National Institute of Mental Health. Some experts expect cases of Alzheimer's disease, a type of dementia, to triple in the next 75 years as the population ages.

But an explosion of research on the brain, one of the last frontiers of medical science, will offer eventual cures for some of today's most feared disorders. For example, a recent discovery that the brain has at least 50 and perhaps hundreds of neurotransmitters — chemicals that direct much of its function — probably will lead to new treatments or cures for Parkinson's disease, epilepsy, schizophrenia, chronic pain, and even Alzheimer's.

The Mind. The workings of the mind, once thought intangible and invisible, will be traced with new scanners. "We're in the process of demystifying the brain. By the year 2000 we may know exactly what is happening, say, in my brain while I'm talking to you", says Dr. Katherine Bick, deputy director of the National Institute of Neurological and Communicative Disorders and Stroke.

Future drugs will literally refresh our memories. "Using certain drugs, we now can make animals remember better, and I believe that before long, we'll help humans with memory problems," forecasts Dr. James L. McGaugh, director of the Centre for the Neurobiology of Learning at the University of California, Irvine. Several U.S. drug manufacturers already are researching these cognitive enhancers."

One of the most ambitious areas of brain research is an effort to make a damaged brain "whole" through special surgery.

Wyatt has found that rats suffering symptoms of Parkinson's disease — a deficiency of a neurotransmitter can recover if affected brain tissue is surgically replaced by new cells. If the process works in rhesus monkeys, Wyatt believes, it eventually should work in humans.

Genetics. Gene by gene, scientists are mapping the human body. The number of identified genes is roughly doubling every two years, and although the rate will slow many of the significant ones will have been located by the turn of the century. Last year, for example, scientists found the gene that corresponds to the fatal Huntington's disease.

About 3,500 illnesses have been linked to genetic defects, including many forms of mental retardation, and future scientists for the first time may be able to treat them. Beyond that, genetic mapping will help explain a broad range of biological functions, such as the process that causes chromosomes to rearrange themselves and trigger cancer, says one of the mappers, Dr. Frank Ruddle of Yale Univesity.

Early Warning. Although ethical questions loom, the new knowledge should yield advances for future health care, among them genetic vaccines and drugs, prenatal screening, and early warnings of predisposition to certain adult diseases, even those caused by a combination of hereditary traits.

"Now, for instance, we have to tell the whole population to cut down on fats," says Dr. Arno G. Motulsky, director of the Centre for Inherited Diseases at the University of Washington, Seattle. "When we can detect genetic predisposition in heart disease, we'll be able to target those people at risk, and the rest may be able to eat as much fat as they want."

If current animal studies succeed, 21st-century doctors may practise "gene therapy," inserting normal genes to correct mistakes in patients' genetic makeup. In the next year or two, the first trial of human gene therapy will be conducted on ADA deficiency, a life-threatening enzyme shortage.

"If gene therapy works with ADA, any hereditary disease could theoretically be treated with gene therapy," says Dr. W. French Anderson, chief of the National Heart, Lung, and Blood Institute's molecular hematology laboratory.

Eventually the treatment could be simple: "A visiting nurse could cure sickle-cell anemia in a population with injections into the bloodsreadm", Anderson says. Like tubercu-

TINY PACEMAKER -- Nova II, the world's smallest heart pacemaker, fits inside a tablespoon and weighs about 23 grams. Developed by Intermedics Inc. of Freeport, Texas, the device has the microprocessing power of an advanced personal computer. The single-chamber pacemaker is designed for use in the upper or lower chamber of the heart and is capable of hundreds of millions of different pacing prescriptions. Pacemakers are used to regulate the heart beat with tiny electric impulses in persons with certain heart diseases.

losis and polio, most genetic disorders could be virtually banished.

Ethical concerns envelop gene therapy, especially the question of using it to change future offspring and "enhancement gene engineering" — insertion of a gene to improve a trait such as intelligence.

Cancer. This complex disease will continue to kill and cripple us in the next century, but it will be more curable. The U.S. National Cancer Institute foresees that if current research strategies succeed, cure rates should rise to an average of 75 per cent by the year 2000, up from about 50 per cent today.

Research is progressing in dozens of directions. Scientists now know that some cancers are triggered by oncogenes, normal genes that turn malignant. They're starting to attack cancer with cells called monoclonal antibodies; these single-purpose molecules, armed with radioactive isotopes or drugs, can seek out and destroy a tumor.

WHO Kit

The pharmacopoeias of industrialized nations list on the order of 1,500 drugs. All have their uses, but only a few can be said to be basic to the health of a human population. Which are they?

The World Health Organisation Committee on the Use of Essential Drugs looked into the problem and has published a list of 249 substances that would be appropriate in such conditions and a list of 22 substances, taken from the main list, considered essential for primary health care.

The 22 substances on the committee's "model list of drugs for primary health care" are acetylsalicylic acid (aspirin), activated charcoal, an antacid, an antihemorrhoidal drug, atropine (an antispasmodic), benzoic acid plus salicylic acid, benzyl benzoate, calamine lotion, chlorhexidine solution, chloroquine, chlorphenamine, ephedrine (for asthma), ergometrine (for bleeding after childbirth), iodine, ipecacuanha, iron and folic acid (a nutritional supplement during pregnancy), lindane, mebendazole, oral rehydration salts, paracetamol, piperazine and tetracycline eye ointment. The committee said the drugs on this list "can be used effectively and safely by responsible individuals with little formal medical knowledge."

Other pioneer treatments seek to exploit the body's natural defences against malignancies. Research on immune substances known as tumor necrosis factor, which destroys cancerous cells while leaving normal cells intact, may lead to radical new approaches to cancer therapy.

More Humane. Combinations of surgery, radiation, and chemotherapy, commonly used today, will continue to be staples of future cancer treatment, the specialists say, but they will be more refined and humane.

One of the main advances over the next 15 years will be better way to determine who will respond to chemotherapy and who won't..

By 2000, some cancers, especially breast and ovarian — should be highly curable, but lung cancer will remain a major killer. And the AIDS virus, which can lead to malignancies, is a worrisome question mark in future cancer rates, Chabner says.

Artificial Organs. Like a repaired — car, the human body of 2000 will be made up of replaceable parts. "There is no organ which won't be replaced in the future." says Dr. Pierre Galletti, who has developed artificial organs at Brown University.

Parts that will commonly be replaced in the future include heart, lungs, kidney, pancreas, blood vessels, ears, and maybe eyes. Eventually, Galletti says, man-made parts will replace the liver and even sections of the brain and nervous system.

Tomorrow's artificial organs will be made of more sophisticated materials than today's "Bioartificial organs," hybrid of natural transplants and artificial parts, may help stop tissue rejection by encapsulating donor material in plastic. Mainly because of a donor shortage, natural heart transplants will wane, says Dr. Willem J. Kolff of the University of Utah. Soon after 2000, he believes, thousands will live with miniaturised artificial hearts.

—NATIONAL GEOGRAPHIC

SPECIAL FEATURE

MICRO COMPUTERS: HOW TO BUY THE RIGHT ONE

The 20th century is witnessing a computer revolution in which information processing and retrieval are being done reliably at incredible speeds. Microprocessors which made their impact felt about fifteen years ago are the basis for a new breed of computers whose ultimate goal is to simulate the intelligence of Man. Microcomputers are becoming faster and cheaper and very soon they are expected to be as powerful as the main frame computers.

Today microprocessors can be found in children's toys, word processors, pocket calculators, industrial robots, home appliances, etc. — to mention a few of their innumerable uses — and there is practically no new machine, instrument, control equipment or information system that does not have a microprocessor in it

First Generations. The first four generations of computers were based on the technology of the age to which they belonged. They were thus based on the vacuum tube technology; the transistor and printed circuit technology; the integrated circuit technology and the Very Large Scale Integrated (VLSI) technology, respectively, during the last four decades. The marvel of the present day fourth generation VLSI technology is that a microprocessor weighing a few grams — a thin 2″ × 1″ silicon chip — can store 512 K or 512 × 1024 bits of 0s and 1s. (Note: bit is an abbreviation for the binary digit).

Computers are analog or digital machines. Those converting numbers into physical quantities, which can vary continuously within a range are called analog computers, while those using numbers, (which are discrete values) are called digital computers. There is a third class of computers called hybrid computers which have digital storage and switching but in them calculations are done in an analog fashion.

While analog computers are for specific scientific/technological operations — such as harmonic analysis, solution of simultaneous algebraic and polynomial equations, solutions of differential equations, etc. in fields such as hydrodynamics, aerodynamics, industrial control, etc. — the digital computers are universal in that they have applications not only in the scientific field but also in the fields of business and administration. Further, due to their superior flexibility and accuracy, the digital computers dominate the contemporary computer scene and this article is regarding the latest digital computers called microcomputers.

Brief History. Though the origins of the mechanical digital calculators can be traced to the mathematicians Blaise Pascal (1623-62) and Gottfried Wilhelm Liebnitz (1646-1716), Charles Babbage (1792-1871) was the first to think of a machine to produce and store the tables of logarithms invented by John Napier (1550-1617). He designed first a difference engine and later an analytical engine, an all-purpose calculating machine. But, despite his best efforts, the use of all his resources and a substantial British Government subsidy, success eluded him. The reason for these unsuccessful attempts is mainly due to lack of technological equipment essential for an invention far ahead of his times. The store and the mill — a part for performing basic arithmetic operations — designed by Babbage, bear a striking resemblance to the parts of the modern digital computer.

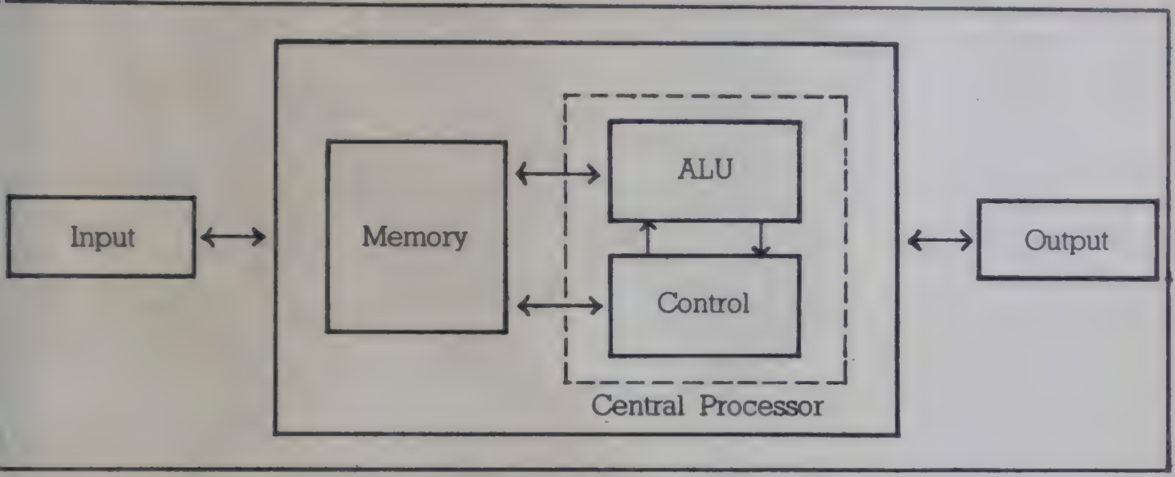
The origins of the present technological revolution can be traced to the 30s. The achievements of Man in the last five decades cannot be matched by all the changes wrought since the birth of mankind. The thermionic valve discovered in 1904, was found to be useful as a counting device by Wynn-Williams in 1931. The Harvard Mark I Computer designed by Howard Aiken is the world's first digital computer which made use of electro-mechanical devices. It was developed jointly by the International Business Machines (IBM) and the Harvard University in 1944.

Alan M. Turing (1912-54) published a paper, in 1937, wherein he described a family of abstract devices, now called after him as Turing Machines, meant to be tools in the hands of mathematical logicians, who can by a series of instructions based on fundamental arithmetic operations solve problems. Through definitions of an algorithm and of computability, Turing established connections between some problems in logic and the theoretical study of algorithms on the one hand and machines or automata on the other. The theory of automata has had a great impact on the design of the digital computer, which is a particular case of the Turing Machine. In 1938, Claude E. Shannon, an electrical engineer, established that switching circuits obeyed the algebra of logic, also called as Boolean algebra after the English mathematician George Boole (1815-64).

Between 1937 and 1944, George Stibitz and his collaborators at the Bell Telephone laboratories produced a "partially automated computer", a "relay interpolator", a "ballistic computer" and an all-purpose computing system. In all these machines, numbers were stored by means of electro-mechanical relays.

Breakthrough. In February 1946, the world's first all-electronic digital computer called ENIAC, the Electronic Numerical Integrator And Calculator, was formally dedicated. It was manufactured for the Ballistic Research Laboratories (Aberdeen) of U.S.A., at the Moore School of Engineering of the University of Pennsylvania. This first generation computer based on vacuum tube technology could store twenty 10-digit numbers.

It had a multiplication time of 3 milliseconds for two 10-digit numbers and it could perform about 5000 additions per second. The ENIAC contained 18,000 vacuum tubes, about 70,000 resistors, 10,000 capacitors and 6000 switches. It was 100 ft. long, 10 ft. high and 3 ft. deep and weighed about 30 tons. It was a decimal machine



Traditional von Neumann architecture

unlike the later computers (starting with the EDVAC in 1950) which are based on the binary (0, 1) system of numeration.

In June 1945, John von Neumann, the outstanding mathematician and logician, prepared the "First draft of a Report on the EDVAC" (Electronic Discrete Variable Automatic Computer), which in the words of Hermann H. Goldstein, a collaborator of von Neumann, is "the most important document ever written on computing and computers". The standard von Neumann architecture for the digital computer, built into the first four generations of computers, incorporated in their structural design the Input, Output, Memory, Arithmetic Logical Unit (ALU) and control units (see figure). This traditional von Neumann design is based on a single central processor unit (CPU) performing operations sequentially on an ordered sequence of instructions, called a program, to produce the desired result.

Programming Languages. Computerware can be divided into hardware and software. The five functional units of a computer built with electronic circuits and electromechanical devices constitute the hardware. Software refers to the range of standard programs or routines supplied by the manufacturer along with the computer hardware.

Programming is the name given to the 'art' of writing a program, in a programming language which is a higher level language. Every machine, depending upon its internal hardware architecture, has a unique low level language called the machine language. In a binary-coded digital computer, the machine language is made of 0s and 1s. To relieve the programmer from the tedium of writing a program in the difficult, low-level machine language, several hundreds of easier, high-level programming languages have been developed. Of these, FORTRAN (FORmula TRANslation), ALGOL (ALGOrithmic Language) and BASIC (Beginners All-purpose Symbolic Instruction Code) are the most widely accepted general-purpose programming languages, while COBOL (Common Business Oriented Language) is the most successful programming language for business applications.

BASIC is a user "friendly" language resembling English and it is an on-line conversational language. Developed by John Kemeny and Thomas Kurtz in the mide-60s at the Dartmouth College, it has been quickly adopted by commercial time-sharing services. It rapidly became the most popular and widely accepted time-sharing language in the computer world.

With the advent of microprocessors, in the mid-70s, BASIC was made available as a Read Only Memory (ROM) chip. In 1978, the American National Standards Institute (ANSI) standardized a subset of BASIC to promote uniformity. BASIC has many dialects and several of these include features not in the ANSI Standard. CBASIC and BASICA are two of the versions of BASIC.

Computer Programming languages are often distinguished as being either compiled or interpreted languages. The users' program in the high-level programming language is called the source code. The manufacturer of the Computer supplies the required software, either a compiler or an interpreter, for every user language implemented on it. The compiler translates the source code into a machine language program called the object code. This object code together with the data, if any, in the source program is then executed in the next stage.

Thus, in a compiled language, there are two phases when the program is run - the compilation phase and the execution phase. An interpreted language, on the other hand, consists of only the source program. It is translated line-by-line directly into machine language instructions, everytime the program is executed for a given set of data. The Microsoft BASIC language is an interpreted language. It is easier to develop a program using an interpreted language.

Burks, Goldstein and von Neumann, in 1946, decided not to use the serial mode of storage and they advocated a parallel procedure. Parallelism, at the most elementary level, means that computers deal with at least 8-bits of information at a time in parallel. Burks, Goldstein and von Neumann observed that a 40-bit number or word can be handled about 40 times faster in a parallel adder than in a serial adder. Of course, a 40-bit adder requires 40-times the equipment needed for a serial adder. To minimize the idle time due mainly to the mismatch between the ever increasing speed of the CPU (Note: the ALU and the control unit together constitute the CPU) and the comparatively very slow auxiliary input/output devices, and to maximize the utilization of the available memory, the concept of parallelism was further developed in the 50s and 60s.

Parallelism today means not only the processing of all the bits of a word simultaneously in an arithmetic operation but also such things as: Concurrent operations, multi-programming and time-sharing. These advances were essentially due to advances in computer software, which took place even as the hardware technology marched on - thanks to miniaturization and micro-electronics - to the present 4th generation VLSI technology.

Classification: Today computers can be classified as: mainframe computers, mini-computers and micro-computers. Mainframe computers are expensive, large, centralized computer facilities where a Super computer (like the CRAY or CYBER) or a large computer (like the IBM 3033, CDC 7600, DEC-10, IBM 370 models, etc.) is conneced to several terminals. A multi-user mainframe computer has a large memory (several MB or Mega Bytes; 1MB = 1 Million bytes; 1 byte = 8 bits) and is capable of speeds of the order of several millions of floating-point operations per second (Mflops). Mini-computers are also multi-user computers having lesser memory and operating at slower speeds. In the mini-computer category are the extremely popular PDP-11 and the VAX-11 computers of the Digital Equipment Corporation (DEC).

Micro-computers are based on standard micro-processors marketed by Zilog, Intel, Motorola, etc. A micro-processor is a single silicon electronic chip which contains the ALU and the control unit - in other words, it contains the logical circuitry for a digital computer. Some of the most commonly used micro-processors are: Z-80, Z-80A, Intel's 8086, 8087, 8088, 80186, 80286 and Motorola's 6800, 68000, 68010, 68020.

Micro-computers are often called Personal Computers or PCs, since they were originally intended to be single user devices either at the office or at home. The home computer is a PC which allows the home appliances as input/output devices - Viz. the T.V. and the cassette tape recorder as the output and input/output devices, respectively. Some of the extremely popular home computers are te Commodore, Sinclair and Apple. The cost of the PCs are crashing down in recent years in the advanced countries, due to mass production of the micro-processors and the severe competition between established manufacturers.

Present Day Micros. The micro-computer industry was revolutionized by the entry of IBM, which started marketing PCs in 1980. The IBM already controls 70% of the mainframe computer world-market. The IBM entered when the Apple, Commodore and Sinclair were dominating the micro-computer industry. By the end of this year (1986) the micro-computer sales of IBM are estimated to cross the 2 billion U.S. dollar mark!

Essentially a micro-computer consists of a System Unit, the Keyboard and a Visual isplay Unit (VDU). The Printer is an auxili-ry unit essential to get the output from the icro-computer as a hard-copy. The stan-ard typewriter keys - Viz. A to Z; 0 to 9 and ertain special characters together constitute he alpha-numeric characters - are an essen-ial part of all the micro-computer keyboards, hich also have two or three additional roups of keys. One of these is a set of umeric keys (0 to 9) arranged as in a alculator for ease of data entry.

This same set may also be used (in a ertain mode) to move the cursor on the creen of the VDU. A set of ten special unction Keys (F1 to F10) exist as a group nd these can be programmed to perform pecial tasks (in the programming mode). esides these there are special keys called rogram control keys. A total of 83 keys are n the Keyboard of an IBM PC and the eyboard is connected to the System Unit of he Micro-computer via a coiled cable.

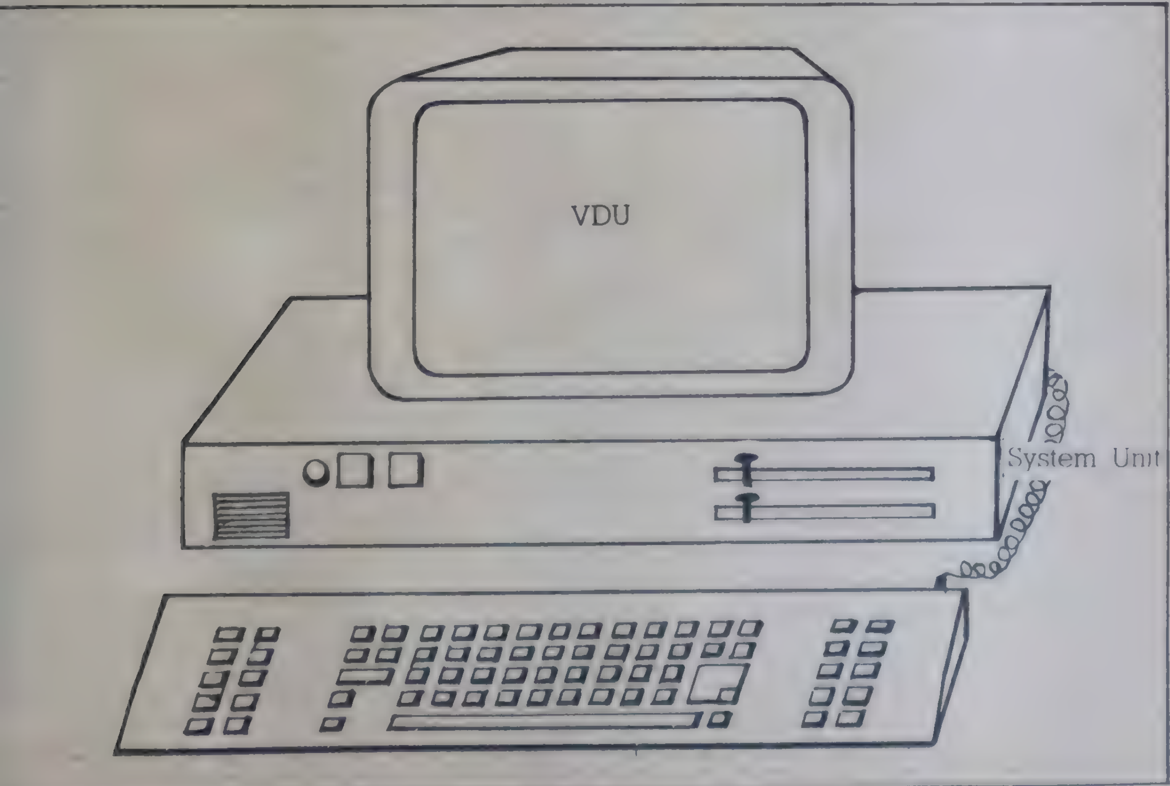
The VDU is the video display terminal for he micro-computer system. This can be ither a monochromatic (black and white) or olour monitor. The normal printer interface is for the monochromatic display unit.

A Colour/Graphics Monitor Adaptor board (or printed circuit) is essential as an interface to enable the use of a colour monitor. (A colour TV set can also be used with a radio frequency modulator). The monochromatic or low-resolution Alpha-Numeric (A/N) mode outputs on the screen of the VDU 25 lines of 40 characters each.

The Colour/Graphics Monitor Adapter operates in addition in a mode called the All Points Addressable (APA) mode in which the display on the colour monitor is one of three secondary modes: (i) high resolution mode (640 horizontal × 200 vertical dots) (ii) intermediate resolution mode (320 × 200 dots) (iii) low resolutic (A/N or text) mode (160 × 200 dots). Each of the small dots or rectangles created on the screen is known as a pixel (for picture element) and each pixel is an independent entity that can be turned on or off and assigned any of a set of specified colours.

The System Unit contains the heart of the micro-computer - a micro-processor (Intel 8088 in the case of an IBM - PC which can

A Micro-Computer (PC)



address upto IMB of memory and has a speed of about 0.65 million operations per second), the dynamic Random Access Memory (RAM), an extended Microsoft BASIC as Read Only Memory (ROM, approximately 40K in capacity), floppy disk drive(s) for auxiliary storage, a built-in speaker and some (5 to 8) expansion slots for system enlargement. Additional dynamic memory (RAM) boards can be used to enhance the memory of the micro-computer. The ROM stores permanently programs essential for the operation of the micro-computer.

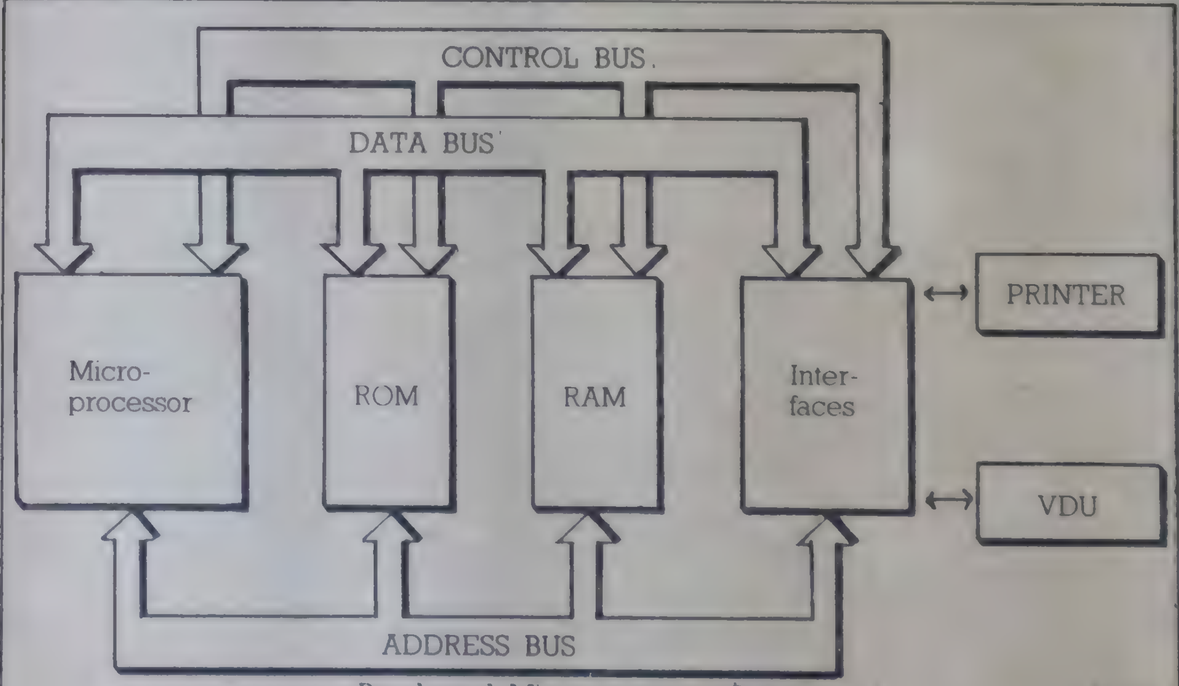
Besides the Microsoft BASIC interpreter language stored in ROM, the Basic Input/Output System, called BIOS and the bootstrap loader are also in ROM. BIOS is a collection of programs that control the transfer of characters between the micro-processor and the various input/output devices like the VDU, Keyboard, Printer, etc., connected to it. The bootstrap loader starts the Computer Operating System from the auxiliary disk storage (either the Floppy Disk Drive, FDD or the Hard Disk Drive, HDD).

Modular. The micro-computer is modular in design and the modules (or blocks) are interconnected through a bus, which was first proposed for the PDP-11 mini-computer and has since become standardized in its design characteristics. The Q Bus is a micro processer version of the UNIBUS of PDP-11 while INTEL came up with the MULTIBUS based computer and Motorola has the VME bus based computer. A typical bus based single board or mother board micro-computer system has its modules interconnected as shown in figure.

The micro-processor or (silicon) chip combines the ALU and the Control Unit. The memory (ROM and RAM) the micro-processor; interfaces for the Keyboard, VDU, etc.; expansion slots; speaker and timing circuits are all on the system board or mother board of a micro-computer system.

Most of the 8-bit micro-processors can only address 64KB of memory at any one time, while most 16-bit micro-processors can address 256KB to 16MB of memory. Moreover, 16-bit micro-processors process data faster, at 2 to 10 times the speed of an 8-bit micro-processor.

Microsoft BASIC is a version of BASIC which is standard with the IBM - PC. The BASIC interpreter is contained in 40K of ROM and the IBM PC uses three versions of BASIC called Cassette BASIC (or C BASIC), disk BASIC and Advanced BASIC (or BASICA). The first two are used when the PC has a Cassette or Disk interface, while Advanced



Bus based Micro-computer System

BASIC has all the capabilities of the other two as well as additional features necessary for the colour/graphics mode.

Desk Top System. The fourth generation microcomputer like the IBM-PC is a small desk-top system. The System Unit is 20" wide, 16" deep and 5.5" high, weighing only 28 pounds with two floppy disk drives (FDDs) each of 160KB or 320KB capacity. It employs the Intel 8088 microprocessor and has 16 KB of RAM, five expansion slots and functions under the Operating System called PC-DOS.

The Operating System is a program supplied by the microcomputer manufacturer. It directs and handles the efficient transport of data within various parts of the Computer such as CPU, Memory, Keyboard, floppy diskettes, VDU, etc. When power is switched on to the microcomputer the operating system has to be first loaded (before the user programme is entered) and this process is called booting.

Microsoft introduced the operating System called MS-DOS for the Intel 8088 microprocessor, which was offered to IBM who made some changes and renamed it as PC-DOS. IBM's PC-DOS is a version of Microsoft's XENIX operating system, which in turn is a version of the UNIX operating system originally developed by Western Electric.

MS-DOS or PC-DOS is capable of managing more memory and provide better graphics than the operating system called CP/M-80, which was developed by Digital Research for 8-bit microcomputers. The version CP/M-86 is the operating system developed by Digital Research for 16-bit microprocessors and MP/M-86 is the multi-user version of the same operating system.

All operating systems have in-built commands and small programmes residing on disk, which when run behave like commands. PC-DOS has nearly 50 commands for system settings, disk maintenance, file maintenance, etc., most of which are understandable from their names (while CP/M-80 has 12 commands).

The versions of PC-DOS implemented on the IBM-PC are called DOS 1.0 and DOS 1.1. In the spring of 1983, IBM released an extended version of the IBM-PC, called the IBM-PC/XT. The XT includes a 10MB Winchester or hard-disk drive (HDD), 128KB of RAM expandable to 640KB; one 360KB floppy disk drive (FDD), an asynchronous Communications Adapter and 8 expansion slots. Together with the XT, a new version of DOS, Viz. DOS 2.0, was made available containing a number of enhancements over the earlier versions.

Prices Crash

Already falling computer prices in the U.S. finally crashed, following South Korean competition and the introduction of new models.

An IBM PC Jr which was selling for 1,295 dollars, went in clearance sales for 279 dollars. Software which previously sold for 34.99 dollars went for less than 10 dollars.

The hardest hit were typewriter manufactures. With computers becoming cheaper than electric typewriters and doing the same job and more with attached printers, typewriter companies began folding one by one.

Portable typewriters provided for correspondents at the IMF-World Bank annual meeting at Washington were made in East Germany. The United States has stopped making manual typewriters.

Soon electric typerwriters may go the way of manual typewriters. The manufacturers are converting electric typewriters into word processors with storage capacity, tiny screen, and, for the benefit of those whose command of spelling leaves something to be desired, a speller which catches mistakes.

Floppy Diskette. The most widely accepted form of auxiliary storage used in microcomputers is the floppy disk storage. A floppy diskette is a round vinyl disk enclosed within a plastic cover. The 5¼" diskettes are becoming universal and are fast replacing the 8" diskettes. Depending upon the Operating System under which the microcomputer functions and the nature of the FDD, information can be stored on the floppy diskette either on one-side (single-sided) or two sides (Double-Sided) and in single density (SD) or double density (DD). Thus floppy diskettes belong to one of four categories: SSSD, SSDD, DSSD or DSDD. Density refers to a diskette's recording format, which in turn affects its capacity. Roughly the capacities of single sided single density and single sided double density 5¼" diskettes are 94KB and 140 to 185KB, respectively.

The Winchester or hard disk drives can store much more data than what can be stored on a floppy diskette. Hard disks come sealed and they cannot be removed or changed like floppy diskettes. Often floppy disk systems are used in conjunction with the Winchester disk system. Hard disks of capcity 10MB to 86MB are now available on micro-computers, which support 1 to 4 such drives (HDDs)

IBM introduced an Advanced Technology PC, called the IBM-PC/AT, in 1984, which made use of the more advanced and powerful Intel 80286 microprocessor capable of addressing 16MB of main memory and 1 Billon bytes of virtual memory. The IBM-PC/AT has a minimum of 512KB of RAM, which can be expanded upto 3MB, about 150,000 transistors. Its processor (Intel 80286) works with 16 bits of data at speeds of upto 1.5 to 2 million instructions per second. The DOS version on the IBM-PC/AT is called DOS 3.0 and it allows the floppy diskette to store 1.2 MB of data on a double sided High density diskette.

The Printer. The Printer usually used along with a microcomputer is a dot matrix printer, wherein a 9 × 9 matrix pattern is used to form the characters. Character sizes may range from 5 to 16.5 characters per inch. On an 8 inch line width, pitch sizes of 5, 8.25, 10 and 16.5 produce a maximum of 40, 66, 80 and 132 characters per line, respectively. The dot matrix printer is connected to a parallel communications port at the back of the System Unit.

Popular printers like the CITOH. OKIDATA and EPSON have 80 or 132 characters per line and are capable of printing from 160 to 400 characters per second. These dot matrix printers are bi-directional. When higher speeds are required one should resort to line printers which are rugged and much more expensive.

Winchester disk drives and Color/Graphics display obviously enhance the capability of a microcomputer. Additional hard disk storage can be added to the IBM-PC/XT or IBM-PC/AT with the IBM's optional Expansion unit. The expansion unit consists of a 10MB or 20MB HDD and 8 expansion slots. The resident RAM on the system board of the PC/XT can be expanded from 128 KB to 256 KB and additional RAM expansion boards can be added to expand the RAM upto 640KB. In the case of the PC/AT, the RAM can be expanded with 5 more 512KB boards.

Superchip

Computer giant, IBM, has opened the door to a new dimension in micro-electronics with the successful production launch of the first megabit chip.

This superchip, measuring just 10.5 by 7.7 millimetres, has more than a million memory cells, each no bigger than a thousandth of a millimetre. That's about a hundredth the diameter of a human hair.

The computer memory of this new generation of microchip could store the contents of 35,000 paperback books.

The megabit chips are in production both at Burlington in the United States and Sindelfingen, southwest of stuttgart, in West Germany, putting IBM ahead of its rivals particularly the Japanese in the ever-competitive technological race.

The Indian Scene. By 1984, close to 70% of the Personal Computers marketed had an Intel 8088 or 8086 microprocessor and had MSDOS or PC DOS available to run on them. Needless to say, this was mainly due to the combined influence of the Microsoft and IBM marketing strategies. The new Computer Policy announced by the Government of India has been hailed by one-and-all as a liberal, open-door policy aimed at bringing remarkable changes in the Computer Scene of the country, being a step in the right direction.

This was the background when Indian manufacturers came out with IBM compatible micro computers. The IBM-PC, PC/XT and PC/AT have set the international standard for the industry and by making the Indian micro computer IBM compatible, easy access was being provided to the vast amount of software developed over the years. Scores of manufacturers came out with models in the Indian market in recent years and the Indian PC-compatibles' line up seems to be ever on the increase.

In the following table are listed some of these. The list represents the wide range available though not complete. Most of the micro computers support the languages FORTRAN and COBOL besides BASIC (available on ROM) Only some support languages like PL/1, APL, PASCAL, LISP, C and ADA.

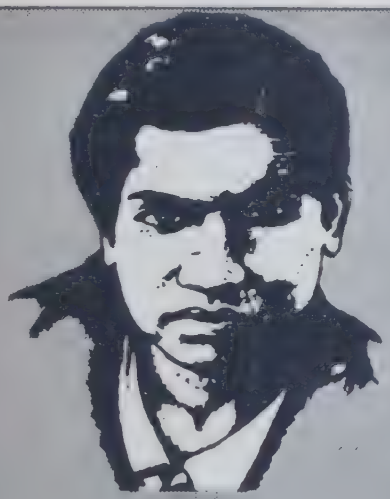
The price for the bare PC starts at about Rs. 20,000/-. The PC-XTs and PC-ATs - having about 512KB of RAM, 1FDD and 1HDD, a dot matrix printer are now available for less than 1 lakh Rs. The microcomputers that use the Intel 80286 or the Motorola 68000 series are Super-microcomputers and their price range is around Rs. 5 to 10 lakh. The price naturally is dependent upon the amount of RAM, the number of terminals, the number of floppy and hard disk drives, the microprocessor employed and the software which goes with the whole system.

While anyone can buy a Computer depending upon his budget, it is not easy to select the right Computer for the particular requirements. A microcomputer is a relatively expensive piece of equipment and is perhaps intended to last for a long time. It may be required:

- as a word processing system
- as a means of home entertainment
- as a means to understand programming
- to maintain name and address files
- to control a manufacturing process
- to prepare the pay-roll for an establishment
- to communicate with a data base available on a computer distributed network system
- to maintain business accounts
- to teach students Computer Science and programming languages
- for Scientific Computations

Once the objectives are defined, then the prospective buyer should look first into the availability of software, since it is considered to be the key to success in computing. So, the first selection is of the software which meets the requirements. For this, it is considered advisable to make contact with other users of the selected software, to find out the efficiency of the software and to come to know of its drawbacks in practice.

Then comes the task of looking for the



Ramanujan

Human Computers

Prof. Hardy walked into the hospital in England where Srinivasan Ramanujan (1887-1920), the Indian mathematical wizard of the century was laid up. During the conversation, the professor casually asked Ramanujan whether he found anything particular about the number of the cab in which he drove down. The number was 1729.

Ramanujan immediately replied 'yes'. It's a fascinating number. It is the smallest number that can be expressed as the sum of two cubes in two different ways ($1729 = 1^3 + 12^3 = 9^3 + 10^3$).

* * * *

Calculating prodigies have often enthralled the whole world with their unparalleled feats.

Bangalore-based Smt Shakuntala Devi, demonstrated the multiplication of two 13 digit numbers 7,686,369,774,870 × 2,465,099,745,779 picked at random by the Computer Department of Imperial College, London on 18th June 1980 in 28 seconds. Her correct answer was 18,947,668,177,995,426,462,773,730.

* * * *

The fastest extraction of a 13th root from a 100 digit number is in 1 min 28.8 sec. by Willem Klein (Netherlands) on 7th April, 1981 at the National Laboratory for High Energy Physics, Japan.

hardware or the microcomputer system itself. This is not an easy task by any means, since there is an enormous amount of competition. It is essential to look carefully into the technical write-ups on different equivalent systems and sieve through the technical jargon. Some of the points to be kept in mind are regarding the reputation of the manufacturer, the experience of the manufacturing company in the field of Computers, the response of those who have acquired that particular model of the Computer and of course, whether the selected software is supported on the Computer to be acquired.

The prices quoted by some of the manufacturers are deceptively low for their entry-level or minimum configuration, when compared to others. The buyer must check for the prices of auxiliary equipment and of additional modules of equipment, to be acquired at a later stage to enhance the capacity and capability of the system. It may be worthwhile to go in for equipment that has been standardized rather than what may be the latest in the area of technology. While discussing the cost of the microcomputer, the buyer should also consider the maintenance charges to be paid annually. For some of the maintenance falls under the category of regular preventive maintenance.

Ancillaries: When the microcomputer to be purchased is an XT having Winchester or hard disk drive, the buyer must be aware of the fact that the HDD is extremely vulnerable to dirt, dust and smoke. It is for this reason that air-conditioning of the room in which the microcomputer is to be housed is recommended. A voltage stabilizer (Servo-type) and an isolation transformer (to avoid the damage of the HDD due to spikes in the A.C. supply) are often recommended as essential. These three ancillary pieces of equipment could themselves cost about Rs. 25,000/- to Rs. 30,000/-.

It is advisable to purchase all the hardware and software required from a single source, marketing a major brand name product with a good network for distribution and maintenance. It must be noted that in our country the microcomputer industry is still in its infancy and since the equipment itself is comparatively of low cost, in a market which is rapidly becoming a buyers' market, the problems of selling, supporting and maintaining the equipment is causing major headaches even to the more experienced of the suppliers.

A user acquiring a microcomputer system belongs to one of three categories:

- a single-user requiring the system for home usage
- a single-user requiring a system for his business usage in the office.
- a group of users requiring a multi-user, multi-tasking system for business usage in the office.

Choice of equipment: While opting for the PC or PC/XT it is advisable to go in for two FDDs, instead of one, since copying is often required and though it is in principle possible to copy diskettes with only a single FDD, it is an awkward process. Large Winchester disks (40 MB or more in capacity) require a tape drive as a back-up, since a head crash on a HDD can be disastrous.

The main memory requirements should be gauged keeping in mind the combined requirements of the operating system, the typical application program envisaged, and the in-memory data storage required. One should never find oneself in the undesirable position of not being able to carry out his application due to lack of main memory (RAM).

The printer is also an important aspect for the business applications of the microcomputer. The dot-matrix printer is capable of only near-letter quality, at best. One should therefore opt for a letter quality printer, instead of, or, in addition to, a dot matrix printer, if the commercial usage demands a good format and quality in word processing applications.

The future As we go on, the hope of having 1,00,000 microprocessors installed by 1990 in our country is likely to be achieved, thanks to the liberal policies of the Government of India. Microcomputers will continue to be important in personal computing and applications like word-processing and management support systems will continue to be popular. All individuals entering the business world are going to require some basic skills in systems analysis and programming. The trend to introduce microcomputers in schools will enable computer literacy to spread uniformly across the length and breadth of the conuntry.

.A new breed of microcomputers using the

COST CONSCIOUSNESS

The microcomputers in the arket today can be broadly ssified as 8-bit, 16-bit and -bit micros. The IBM, hich has set the standard in ersonal Computers, introced the PC in 1980, the XTended PC or PC-XT in pring 1983 and the Advnced Technology PC or PC-T by 1984.

Depending on the micropocessor employed in the micocomputer, it is further said be an 8/16, 16/16, 16/32 or 2/32 micro depending upon e widths of the address/data uses employed for transportg information inside the ystem.

The XT and AT labels refer the availability of a Winhester or Hard Disk Drive HDD) which can store from 0 MB to 80 MB compared to Floppy Disc Drive (FDD) f capacity from 160 KB to .2 MB. Modern micros are ulti-user models and are odularly expandable, startg with a basic configuration r the System.

To arrive at the cost of the asic configuration, one reuires first the main memory RAM) requirement, the sing or multi-user categorizaon, the necessity of having a IDD facility, the work-load nd whether numerical work eeds speeding-up with the elp of a math-coprocessor.

At the bottom, in the Indin market today, a SINCAIR ZX spectrum microomputer which has 48K emory (an 8/8 micro based n a Z-80 A processor) is a home computer available at a cost of about Rs. 4000/-. This home computer requires a colour TV set for use as its Visual Display Unit (VDU) and an ordinary cassette taperecorder for input/output of program.

A later version of SINCLAIR and the comparable COMMODORE home computers make these home computers great fun for children.

Once we go to the category of a PC, we should start specifying the system features. An Intel 8088 processor—based micro which has 256 KB RAM, 2 FDDs (each of 360 KB capacity); a monochrome VDU or monitor; a standard keyboard (with numeric pad and LEDs); 2 serial and 2 parallel communication ports and a standard 80/132 column dot matrix printer, would cost approximately Rs. 32,000/-.

A corresponding XT version, which includes in addition a 10 MB or a 20 MB HDD would cost about Rs. 43,000/-. A colur/Graphics monitor if available with the PC or PC-XT versions mentioned above (instead of the monochrome VDU) would cost an additional Rs. 10,000/- to Rs. 12,000/-.

At least one Operating System comes with the micro and BASIC language is hardwire programmed as ROM. Other programming languages like FORTRAN, COBOL, PASCAL or C, etc. and software for word-processing, electronic spreadsheets, etc. are to be acquired at additional cost.

The Hindustan Computers Ltd. announced a reduction in the prices of their Busybee PC and Busybee-PC/XT in Sept. A more recent model called the Busybee-II (a PC/XT) is based on the Intel 80286 microprocessor (and the configuration: 256 KB RAM; a 10 MB/20 MB HDD; 2 FDDs; a 80/132 column dot-matrix printer and a monochrome VDU) costs about Rs. 54,000/-.

Based on a later version of Intel 80286 processor, HCL is marketing the Busybee AT Plus at a cost of about Rs. 90,000/- for a basic configuration of 512 KB RAM; a 1.2 MB FDD; a 20 MB HDD; a VDU terminal and a 80/132 column dot-matrix printer.

This Busybee AT Plus can be expanded to have 8 KB RAM; a 1.2 MB FDD; a 80 MB HDD; a 80/132 column dot-matrix printer (capable of a speed of 400 characters/sec.) and a maximum of 11 VDU terminals, at a total cost of Rs. 3.25 lakhs.

Microcomputers in the Indian Market

Company	PC	Processor	RAM	FDD	HDD	OS
Bradma of India Ltd.	BRADMA PC-XT-16	8088*	256-640 KB	360 KB	10-20 MB	DOS, OP/M-86
Chougule Industries	CHI^2	8088	256 KB	360 KB	—	MSDOS
Computer Maintenance Corporation	IMPACT - 8640	MC 68000	16 MB	640 KB	86/160/340 MB	UNIX
CMS Computers Pvt. Ltd.	CMS Series 300	8088*	256-512 KB	360 KB	10-70 MB	MSDOS, CP/M-86
Delhi Cloth Mills	DCM-Tandy TRS 80 Model 4	Z-80 A	128 KB	184 KB/1MB	15 MB (upto 4)	TRSDOS, CP/M +
	DCM - Tandy 1000	8088*	256 - 640 KB	360 KB	20 MB (upto 2)	MSDOS
	DCM - Galaxy/21	8086*	512 KB - 1 MB	1 MB	86/160 MB (upto 2)	MULTOS
	Olympia/32	80286*	1-8 MB	1 MB	86/160/337 MB (upto 4)	XENIX, MULTOS
	DUAL 68	68020*	1-16 MB	1 MB	86/160/337 MB (upto 4)	UNIX
EIKO Computers	EIKO-PC	8088*	128 KB-1MB	390 KB	10 MB	PCDOS, MSDOS
Electronics Corpn. of India Ltd.	Super-32 series	68000*	2-72 MB	—	70 MB (removable) 140/450 MB	SINTRAN, NDIX
Hindustan Computers Ltd.	Busybee I	8088*	256-640 KB	360 KB	20 MB	DOS, MP/M-86
	Busybee II	80286*	256KB-2.14 MB	360 KB/1.2 MB	40 MB	DOS, MP/M-86
	Workhorse II (Single or Multi)	8086 *	256-512 KB 1 MB	800 KB	20/36/80 MB	CP-M/86, MP/M-86
	Horizon II (64 terminals)	68010*	2-16 MB	—	105/160/340 MB	UNIX
	Horizon III (64 terminals)	68020*	2-16 MB	—	105/160/340 MB	UNIX
Infoton Systems & Services	INFOTON - PC/XT	8088*	64-640 KB	360 KB	10 MB	MSDOS, PCDOS CP/M-86

Innovative designs Pvt. Ltd.	LOTUS-PC/XT	8088	128-640 KB	360 KB (upto 4)	10 MB	MSDOS, CP/M-86 UCSD-P System
International Computers Indian Manufacture Ltd.	ICIM Business PC (4 terminals)	8088*	256 KB-1 MB	1 MB	10-20 MB	CCPM/86 MSDOS, PCDOS
Machinery Manufacturers Corpn.	BLUECHIP	8086*	256-512 KB	500 KB/1 MB (8") 800 KB/16 MB	5-70 MB	MPOS
Microsense Computers Ltd.	MICROSENSE	8088*	128 KB-1 MB	360/680 KB	10/30/80 MB	MSDOS
Minicomp	NEPTUNE-PC/XT (1/3/32 terminals)	8088*	128-768 KB	360 KB	10-80 MB	CP/M-86 MSDOS, UNIX, UCSD
NELCO	CORONA PC	8088*	256-512/640 KB	360 KB	10 MB	MSDOS
OMC Computers Ltd.	OMEGA Superstar	68010	512 KB-2 MB	616 KB	43 MB (upto 3)	UNIX
PAC Computers Ltd.	PAC-V/VI	8088	256-640 KB	360 KB (upto 4)	20-80 MB	MSDOS, CP/M-86
Pragati Computers	AL 2016	Z80-B	64 KB	(8") 1.23 MB (upto 4)	upto 1000 MB	CP/M
	PRAGATI AL-6816	68000	16 MB	—	160 MB	UNIX
Sita Electronics Pvt. Ltd.	ASHWINI-200	8088*	128-768 KB	upto 1 MB	—	MSDOS-like
Usha Microprocessor Controls Ltd.	EAGLE-PC	8088*	128-640 KB	360 KB	10 MB	PSDOS, MSDOS CP/M-86
	PC-XT	8088*	128-640 KB	360 KB (upto 4)	20 MB	CCP/M
WIPRO Information Technology Ltd.	WIPRO-PC/XT	8088*	256-640 KB	360 KB/1.2 MB	10/20 MB	MSDOS, CP/M
	WIPRO-B 200	8086*	256-512 KB	1.2 MB	10/20 MB	DBOS
	WIPRO-B 200 E	80186*	512 KB	1.2 MB	36/80 MB	DBOS-86
Zenith	PROFESSIONAL	8086*	128 KB-1 MB	(8") 1.1 MB	20-150 MB	MSDOS

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* The Intel 8086 and Intel 8088 have Intel 8087 as the Math-Coprocessor; the 80286 has 80287 as co-processor. Motorola MC 68000, MC 68010 and MC 68020 have MC 68881 as the Math-Coprocessor.

Intel 80386 are being introduced in the U.S. this year (1986). This chip can address much more memory than any available today. It has a potential capacity of 4 billion bytes (or 4 giga bytes, 4 GB) of main memory and 64 trillion bytes (or 64 tera bytes, 64 TB) of virtual memory. The 80386 is a finger-nail size slice of silicon etched with approximately 275,000 transistors and circuits.

It can process about 10 million instructions per second which is close to the performance of mainframe computers. With the help of math-coprocessors, it can perform 4 million floating point operations per second. This will be the era of general-purpose 32-bit microprocessors having a 32-bit data bus and a 32-bit address bus. The Intel 80386 will be capable of true multi-tasking. Operating systems and software capable of harnessing its staggering speed and power, UNIX and DOS versions, are expected by the middle of 1987.

If Apple II, the strongest of the 8-bit machines, can be said to belong to the first generation of microcomputers, then the 16-bit based IBM-PC ushered in the second generation and the Intel 80386 based microcomputers will belong to the third generation of personal computers, which have the power of present day mainframe computers.

Fifth Generation Computer, or Artificial Intelligence: Great strides are expected to be made in operating systems and system commands will become simpler and more natural than what they are today. The Japanese announcement of a 10-year fifth generation computer project at the beginning of this decade is expected to result in a computer.

- Capable of 10 to 1000 times the speed of the 4th generation computers.
- Supported by expert systems each devoted to a particular task (and each containing information as large as that of the Encyclopedia Britannica).
- Capable of natural language recognition, in lieu of the programming languages.
- With perception- capable of vision and speech recognition.

This Japanese announcement has been taken up as a challenge by U.S.A., Britain and Europe, who have announced their 5th generation 10 year, 1 billion U.S. $ projects.

New microprocessors employ two know techniques to increase their throughput: v pipelining and parallelism. Pipelining i volves operating on several instructioins the same time.

In the pipeline principle, the individu operations are broken down to a sequence subsidiary operations, when possible, eac requiring the same time which can b carried out separately and independentl The instruction stream as well as arithmet operations are pipelined. That is to say, th execution of a new intruction begins eve before the execution of its predecessor complete. Extending the concept of paralle ism, many relatively inexpensive microprocessors are networked into a multi-processor system called as a parallel or concurrer processor system. Such a multi-processo system not only reduces the cost significantl but also achieves the desired speed i computing for the 5th generation computer

The Connection machine (built by Thinking Machines Corporation at the M.I.T. Artificial Intelligence laboratory in U.S.A.) whic became commercial, by the end of Apri 1986, is one of the outcomes of this race to the 5th generation Computer or Artificial Intelligence. It has a network of 65,536 microprocessors each assigned with its own memory bank and has parallel architecture buil into its hardware- a departure from the traditional von Neumann architecture. In the words of its inventor Daniel Hillis "the coventional computer is to the Connection Machine what the bicycle is to a supersonic jet"!

A breakthrough in the realm of printers is round the corner. While letter-quality printers are becoming faster, the real breakthroughs are to be found in the laser printers at one end of the price spectrum and the ink jet printers near the other end. The firs relatively low cost laser printer in the marke this year is the Kiss at a cost of below 200 U.S. dollars. It brings the price of the crisp almost print-like reproduction of laser technology within the reach of many mor computer users.

The technology change expected by 199 will therefore make microcomputers an super-microcomputers easier to use an operate. □

PART TWO

WORLD PANORAMA

GREAT CIVILIZATIONS

Civic society or organised socio-political civilization first took shape within a narrow geographical compass that covered Egypt in the west, Indus Valley in the east, Anatolia (Asia Minor) in the north, and Sumeria (Iraq & Iran) in the south.

Civilization radiated outwards from these centres, reaching the Mediterranean sea board and the islands in the west, and China in the east, around 2000 B.C.

The first cities were very small affairs centred around temples. The highpriest of the temple was also the chief of the city. Very soon some temples became more prominent than others and the highpriests of these temples became the first among city chiefs, or in other words, kings. Being extremely limited in territorial area, these embryonic states were little more than city states. Among the earliest of such states were those of the Indus Valley, Sumer and Egypt.

Indus Civilization. The Indus Civilization is the last of the great civilizations to be discovered. Though a late-comer to history books, the Indus civilization is th oldest of the first great civilizations known Recent researches at Mehrgarh and othe sites in the Indus Valley indicate that th Indus Civilization had its beginning between 7000 and 6000 B.C. Carbon-1 analysis has shown that the later structures a Mehrgarh belong to the 6th millennium B.C Earlier structures must therefore belong to period prior to BC 6000.

It is not known who the builders of the Indus civilization were. In all probability they were a Mediterranean race, allied t the Dravidians of India. Nor do we know ver much of this civilization as the Indus seals stil remain undeciphered (see Box). But the artifacts that have been found and the structures that have been unearthed indicate

The Indus Script

Two interpretations regarding the Indus script are reproduced below. They show the great divergence of views among scholars in this regard. Both were reported in 1980.

Soviet experts have cracked the Indus Valley script. They claim that the script resembles a Dravidian language, akin to Tamil, Malayalam or Kannada.

Describing it as a fundamental discovery, the experts say that the script of the civilisation, which existed around 2500 B.C., is completely indigenous and original and that it was not brought from outside.

The experts say that the script has no connection with the Sumerian civilisation of West Asia or with the Egyptian Hieroglyphics.

The script, however, has been found on 800 seals in West Asia – a good evidence of a flourishing trade between these two civilisations.

From his meticulous analysis of the Indus script and language Dr. S. R. Rao, eminent archaeologist, has asserted that it would be illogical to maintain that the Indus civilisation was destroyed by invading Aryans.

Mr. Rao described the Indus script as of Indo-European class and not of Dravidian origin as popularly believed so far. He emphasised that it was the Indus people who laid the foundation of the Vedic society.

After reading nearly 1800 seals of the Harappan culture, Mr. Rao has come to the conclusion that the Harappans not only spoke an Indo-European language but also observed religious rites which were later adopted by the Aryans.

vel of civilization no whit behind the ed civilizations of Sumeria and Egypt. A nge thing about this civilization is that it ppeared suddenly. What caused this den disappearance is still a mystery (see t III, India).

meria. Sumeria was in the lower ey of the Euphrates and Tigris, in the thern half of Mesopotamia. We do not w who the Sumerians were. They were a adheaded race, thickset and short in ure with fleshy faces and big noses longing the line of the forehead without intervening depression. Their eyes were dely set apart and slanting. They have en compared by some to the Turanians of ay and by others to the Dravidians of India. Sumeria had a hectic history. The original nerians were overwhelmed by a number foreign conquerors, through successive nturies – the Akkadians. Babylonians, syrians, Chaldeans etc. But all through se conquests and turmoil, the old nerian civilization remained intact, being pplemented and reinforced by the nquering races.

gypt. The racial origin of the Egyptians lso a matter of dispute. Some regard them as a conquering Asian race acquainted with metallurgy and armed with superior weapons, who easily triumphed over the tribes inhabiting the Nile Valley in neolithic times. The history of Egypt, unlike that of Sumeria, was more or less smooth. Except for the invasion of the Asian tribe Hyksos in 1790 B.C. and their occupation of Egypt till 1573 B.C. Egypt was ruled by a succession of indigenous dynasties, under whom the old Egyptian civilization grew up to its full dimensions.

On the whole, the Indus, Sumerian and Egyptian civilizations remain the supreme human achievements of the 4th millennium B.C. Once started, civilization continued to expand. Around 2000 B.C. the Phoenicians settled on the Syrian coast and laid the foundation of a maritime empire in the Mediterranean.

Hittites established a kingdom in Asia Minor which later expanded eastwards and southwards. At Mycenae (Greek mainland) and Crete and adjoining islands, other tribes about whom also we know very little, built cities that rivalled those of Sumeria and Egypt in splendour.

OUTLINE OF HISTORY

The great Civilizations of Sumeria, Egypt and the Indus Valley open the long and chequered history of mankind. An outline of that history through the ages, from the early civilizations to the two World Wars, is given below in the chronological order.

3.C. 6000: Neolithic settlements at Mehr- rh, Baluchistan in the *Indus Valley;* Sun- ed brick houses; Domestication of cattle, ter buffalo, sheep and goats; Cultivation of eat and barley; Copper known. 5000: velopment of farming in the Indus Valley – veral varieties of wheat and barley/fruit es; jujubu and date–cultivation of cotton; tery and beads.

Neolithic settlements in *Sumeria;* domes- ation of animals; Beginnings of farming; olithic settlements in *Egypt.* 4000: Inven- n of potter's wheel and bow drill in *Indus lley;* kilnfired pottery; red painted wares; ads of local stones and imported turquoise copper melting (see Part III India). Susa founded in *Sumeria;* White painted pottery in *Egypt* and development of farming.

Writing. 3500: Growth of pottery in *Indus Valley;* several varieties; eggshell thin goblets; vitrified decorated wares; beads of lapis lazuli, turquiose and carnelian; Sumeria develops cuneiform (wedge-shaped) writing; Sumerian temples at Erudu, Ur and Urak; Potter's wheel in use in Sumeria.

3000: Copper alloys in *Indus Valley;* bronze in use; cultivation of wine grape; First dynasty at Ur in Sumeria; Wheeled vehicles in use; linen produced; King Menes the Fighter unites Upper and Lower Egypt; *Phoenicians* settle on the Syrian coast with centres at Tyre and Sidon; Early Minoan civilization in Crete.

2980: Memphis made the capital of Egypt; Pharoah god-king. 2870: Beginnings of Trojan culture in Asia Minor. 2850: Traditional beginnings of civilized life in China. 2650: The first pyramid (stepped pyramid) built in Egypt. 2500: Sixth dynasty in Egypt; Collapse of the Old Kingdom; Dominance of the Ur dynasty over all Sumeria; Sumerian numerical system based on 6 and 12; Lunar calendar (360 degrees in a circle, 60 minutes in an hour, 60-second minutes in a minute etc.)

Calendar. Egypt introduces calendar of 365 days without adjustments; Egyptians discover use of papyrus; Equinoxes and solstices determined in China; Beginnings of astronomical observations in Sumeria; India, Egypt and China. Harappan civilization in Indus Valley (see Part III India).

2370: Sargon, King of the Akkadians (a Semitic tribe), conquers Sumeria and Elam and makes Agad his capital. 2200: Traditional beginnings of the Hsia dynasty in China. 2100: Abraham leaves Ur in Chaldea. 2000: Kingdom of Elam attacks Akkadia, destroys the capital Agad and annexes the kingdom of Ur. Hittites, an Indo-European tribe, establish a kingdom in Asia Minor (Anatolia). Middle Minoan period in Crete. Mycenae in Greece becomes a centre of civilization. Aryan settlements in India; Vedic civilization takes shape; The composition of the Rig Veda.

1995: Amenemht founds the 12th dynasty in Egypt. 1990: Babylonians conquer the whole of Mesopotamia, including Assyria (northern Mesopotamia) and Elam (eastern Iran).

1800: Hammurabi, the Babylonian Emperor, proclaims a code of laws. 1790: Hyksos, an Asian tribe, dispossesses the 13th dynasty and occupies Egypt. 1760: Shang dynasty begins in China. 1595: Hittites overthrow Babylon. 1580: Cretan civilization at its height. Jews enslaved by Egypt. 1573: Hyksos, the shepherd kings, driven out of Egypt.

Mycenaean. 1500: Flowering of Mycenaean civilization in Greece. 1480: Moses leads Jews out of Egypt. 1400: Myceanaens destroy Knossus palace at Crete. Decay of Cretan civilization. 1380: Amenhotep (Amenophis IV) revolutionises Egyptian religion and proclaims a new religion. 1362: Rebellion in Egypt: Egypt loses her outer poss
sions. 1345: 19th dynasty in Egypt: Eg
recovers her former power. 1250: Assyria
conquer Babylon.

1200: Philistines (Phoenicians) from nor
Mediterranean occupy Palestine. Etruscar
an Asian people, settle in Italy. Homer
siege of Troy by Greeks (?). Downfall of th
Hittite Kingdom. 1027: Chou dynasty begi
in China.

1013: Rise of the Israelites in Palestin
David (1013–973) establishes Israelite heg
mony. 1000: Egypt ceases to be a powe
Epic civilization in India – composition of th
great epics, Ramayana and Mahabharat
Phoenicians develop alphabetical writing

Old Order Change. 850: Phoen
cians found the city of Carthage on th
northern coast of Africa. 753: Tradition
foundation of the city of Rome. 745: Assyria
Empire at its height. 621: Draco publishe
Athenian laws† 612: Nineveh, the capital
the Assyrian Empire, destroyed by a com
bination of Babylonians, Scythians an
Medes.

610: Ionian (Sanskrit *Yavana*, Persian an
Arabic *Yunani*) city states on the west coa
of Asia Minor. 604: A new empire in Mesopo
tamia with Babylon as capital. 594: Solo
reforms Athenian constitution. 586: Babylo
nians capture Jerusalem. 560: Croesus, repu
ted to be the richest king of his times, rule
Lydia. Lydians issue the earliest know
systematic currency.

538: Cyrus founds the Persian Empire an
captures Babylon. 509: Traditional foundatio
of the Roman Republic. 490: Battle
Marathon; Athenians defeat Persians.

Buddha. 483: Death of Buddha in Indi
480: Battle of Thermopylae – Spartans unde
Leonidas wiped out by Persians; Battle
Salamis (naval battle) – Athenians unde
Themistocles rout the Persians. 479: Battles
Plataea and Mycale – Greek victories ov
Persia by land and sea respectively; Ath
nian supremacy in Greece begins; Final er
of Persian threat; Death of Confucius
China.

461: Pericles comes to power in Athen
431: Outbreak of Peloponnesian War b

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† A stiff code of conduct with severe punishments for mi
breaches – hence the term *draconian*.

ween Athens and Sparta. 425: Death of Herodotus. 404: Athenians surrender to Sparta; Beginning of Spartan supremacy in Greece. 399: Execution of Socrates. 371: Battle of Leuctra – Thebans defeat Spartans and become the leaders of Greece; Theban hegemony.

347: Death of Plato. 338: Battle of Chaeronea; Philip II of Macedon defeats the Greek city states and becomes supreme in Greece.

Alexander, the Great. 336: Alexander becomes the King of Macedon. 334: Battle of Granicus; Alexander's first victory over the Persians. 333: Battle of Issus; Alexander's second victory over Darius of Persia.

332: Alexander captures Tyre and occupies Egypt. 331: Battle of Arbela (Gaugamela); Alexander finally defeats Persians. 330: Death of Darius and the end of Persian Empire. 326: Battle of Hydaspes; Alexander defeats Porus of India and conquers the Punjab. 323: Death of Alexander at Babylon; Ptolemy I founds dynasty in Egypt; Alexandria (in Egypt) becomes the intellectual centre of the world.

321: Chandragupta Maurya establishes the Mauryan Dynasty in India; Death of Aristotle. 312: Seleucus I founds dynasty in Asia. 275: Battle of Beneventum; Rome finally defeats Pyrrhus and becomes undisputed master of all Italy.

Emperor Asoka. 274: Asoka becomes Emperor of India. 264: Beginning of the First Punic War between Rome and Carthage. 241: End of the First Punic War; Sicily becomes the first province of Rome. 221: Shih Huang Tih completes conquest of all Chinese states. 218: Beginning of the Second Punic War: Hannibal, the Carthaginian general attacks Rome.

214: The construction of the Great Wall of China. 213: Burning of Chinese classics. 212: Romans capture Syracuse; Archimedes killed. 202: Eastern Han dynasty in China; Hannibal defeated by the Roman general, Scipio Africanus. 201: End of Second Punic War; Rome dominates western Mediterranean. 196: Rome conquers Macedon and Greek city states. 160: Judas Maccabaeus leads successful revolt against the Seleucid dynasty. 149: Outbreak of Third Punic War

146: Romans invade Carthage and make it a Roman province. 124: Establishment of a college in China to train civil servants. 110: China under Emperor Wu Ti expands towards south east. 106: Marius and Sulla become Roman leaders. 88: Civil war between Marius and Sulla begins.

Julius Caesar. 60: The formation of the First Triumvirate; Pompey, (Julius) Caesar, Crassus. 58: Caesar begins conquest of Gaul. 55: Caesar's conquest of Britain. 53: Crassus, defeated by Persians, falls into disgrace in Rome. 49: Caesar crosses the Rubicon and challenges Pompey. 48: Battle of Pharsalus; Caesar defeats Pompey. 46: Caesar reforms the calendar; later known as the Julian Calendar. 44: Murder of Caesar.

43: The formation of the Second Triumvirate; Antony, Octavian (Augustus), Lepidus. 42: Battle of Philippi; Antony and Octavian defeat Brutus and his associates. 31: Battle of Actium; Octavian defeats Antony and Cleopatra and becomes the master of the Roman Empire. 27: Senate of Rome confers the title of ***Augustus*** on Octavian; Octavian becomes ***Caesar Augustus***.

Christ is Born. 4: Birth of Jesus Christ?*.

A.D. 6: China institutes Civil Service Examination. 14: Augustus dies. 25: Beginning of Later Eastern Han dynasty in China. 29: Crucifixion of Christ. 63: Death of St. Paul. 64: Great Fire of Rome. 68: Death of Nero; End of Julio-Claudian line of Roman emperors. 70: Emperor Titus suppresses Jewish revolt and destroys Jerusalem.

79: Vesuvius volcano erupts and destroys the famous Roman towns of Pompeii and

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* Dating 4 B.C. as the year of Christ's birth has always been a matter of dispute among chronologers and hence it is given with a question mark. Christian Era commenced on January 1, 754 AUC (ab urbe condita – "from the foundation of the city (of Rome)".

Christ's birth was believed to have occurred on December 25. Immediately preceding years are reckoned as B.C (Before Christ) and A.D. (Anno Domini – in the year of the Lord")

Chronologers admit no year zero between 1 BC & AD 1

Dionysius Exiguus, the Scythian monk who invented AD reckoned the birth of Christ to have occurred in 753 AUC, but Christ was born under Herod the Great according to the Gospels; ie., at the latest in 750 AUC

This dating though disputed has continued in use to the present day and, as a result, the Nativity is reckoned to have taken place in or shortly before the year 4 BC when Herod died.

Herculaneum. 80: Completion of the Roman Colosseum. 96: Accession of Nerva, the first of the "Five Good Emperors". 97: Chinese penetrate into Persian Gulf. 117: Death of Trajan and the accession of Hadrian; Roman Empire reaches its greatest extent.

180: Death of Marcus Aurelius, last of the "Five Good Emperors"; Beginning of the decline of the Roman Empire. 212: Emperor Caracalla gives Roman citizenship to all the free citizens of the empire. 220: Han dynasty ends in China; Period of Civil War in China begins. 230: Emperor Sujin in Japan organises a Japanese empire. 251: Goths defeat and kill the Roman emperor Decius.

284: Diocletian becomes emperor of Rome; persecution of Christians reaches its climax. 306: Constantine becomes emperor. 313: Edict of Milan gives tolerance to Christians in the Roman empire. 320: The Gupta dynasty rises in India. 325: The Council of Nicaea, first General Council of the Christian Church.

Roman Empire Declines. 378: Battle of Adrianople; Goths defeat and kill Eastern Roman Emperor Valens. 395: Death of Emperor Theodosius the Great: Final division of the Roman Empire into Eastern and Western empires.

410: Alaric the Goth captures and destroys Rome. This is taken to be the end of the Roman Empire. 415: Visigoths begin conquest of Spain. 429: Vandals begin conquest of North Africa. 452: Attila invades Italy. 455: Rome pillaged by Vandals. 476: Romulus Augustulus, the last Western Roman emperor, deposed by Odovacar; The end of Western Roman Empire.

481: Clovis becomes the King of Franks and occupies Gaul. 493: Theodoric founds Ostrogothic Kingdom in Italy. 527: Accession of the Eastern Roman Emperor Justinian I. 529: Publication of the Civil Code by Justinian. 538: Justinian builds the famous Christian church Hagia Sophia at Constantinople.

Rise of Islam. 570: Birth of Mohammed. 589: Reunion of China under the Ch'en dynasty. 605: Grand Canal of China constructed. 618: Tang dynasty comes into power in China. 622: Hejira or flight of Mohammed from Makkah to Medina; Beginning of the Mohammedan era. 632: Death of Mohammed; Accession of Abu Baker, the first Caliph.

636: Muslims occupy Damascus. 638: Muslims capture Jerusalem. 641: Persia conquered by Muslims. 643: Muslims occupy Alexandria. 698: Muslims invade Carthage. 711: Muslims spread into Spain. 718: The greatest Muslim attack on Constantinople fails. 732: Muslim advance in Spain halted by Charles Martel. 750: Beginning of Abbasid Caliphate (replacing Ommayyads).

786: Accession of Haroun-al-Rashid in Baghdad. 800: Coronation of Charlemagne as Holy Roman Emperor. 814: Death of Charlemagne and the division of his empire. 827: Muslims invade Sicily. 840: Muslims capture Bari and occupy Southern Italy.

Verdun Treaty. 843: Treaty of Verdun; Final division of the Carolingian Empire founded by Pipin, King of France, in A.D. 751; Beginning of France and Germany as separate states. 862: Rurik founds Viking state in Russia, first at Novgorod, later at Kiev. 866: Fujiwara period begins in Japan. 868: The first printed book in China. 893: Simeon founds first Bulgar Empire in Balkans. 899: Death of Alfred the Great in England.

900: Ghana in North West Africa at the height of its power. 912: Accession of Abder Rahman III; The greatest period of the Ommayyad Caliphate of Cordova (Spain). 955: Battle of Lechfeld; Magyars, finally defeated by Otto the Great, settle in Hungary. 960: Beginning of Sung dynasty in China. 966: Miezko I, King of Poland, accepts Christianity. 968: Fatimids begin their rule in Egypt. 982: Norsemen discover Greenland. 987: Hugh Capet, King of France, founds Capetian dynasty. 993: Olof Skutkonung, King of Sweden, converted to Christianity. 998: Vladmir, King of Kiev, becomes Christian.

1000: Leif Ericsson discovers North America. 1016: Canute becomes King of England. 1066: William I, Duke of Normandy, conquers England. 1069: Reforms of Wang-An-Shih in China. 1071: Battle of Manzikert; Seljuks destroy Byzantine army. 1073: Gregory VII becomes Pope. 1075: Seljuk Turks capture Jerusalem. 1086: Compilation of Domesday Book in England.

Crusade. 1095: Council of Clermont; Pope Urban II preaches First Crusade. 1099:

First Crusade under Godfrey of Bouillon takes Jerusalem. 1135: Stephen becomes King of England; civil war with Matilda; anarchy follows. 1143: Alfonso Henriques becomes first King of Portugal. 1144: Muslims capture Christian stronghold of Edessa. 1148: Second Crusade fails to capture Damascus. 1152: Accession of Emperor Frederick Barbarossa. 1154: Henry of Anjou establishes the Plantagenet dynasty in England. 1161: Explosives used in warfare in China. 1176: Battle of Legnano; Frederick Barbarossa defeated by the Lombard League; Italian states become autonomous. 1185: Kamakura period in Japan; Epoch of feudalism in Japan which lasts until 1333.

1189: Third Crusade under Frederick Barbarossa, Philip Augustus of France and Richard the Lion Heart of England. 1191: Crusaders capture Acre. 1192: End of the Third Crusade without regaining Jerusalem. 1204: Fourth Crusade captures Constantinople. 1206: Jengiz Khan becomes King of the Mongols and overruns Central Asia. 1212: Battle of Las Navas de Tolosa; Spaniards win decisive victory over the Muslim Moors.

Magna Carta. 1215: Fourth Lateran Council; Papal authoity reaches its zenith; Magna Carta in England. 1237: Mongols invade Russia. 1241: Mongol incursions into Central Europe. 1260: Kublai Khan rules in China.1284: Edward I of England conquers Wales. 1291: The League of Uri; Beginnings of the Swiss Confederation; Acre falls to Muslims; Crusades end. 1309; Papacy moves to Avignon; Beginning of the ***Babylonish Captivity.*** 1314: Battle of Bannockburn; Robert Bruce of Scotland defeats the English army. 1336: Ashikaga period in Japan.

1338: Beginning of the Hundred Years' War between England and France. 1346: Battle of Crecy; English victory over the French and the Scots. 1348: Black Death reaches Europe. 1356: Battle of Poitiers; Black Prince of England defeats the French. 1360: Peace of Bretigny; Edward III of England gains territories in France. 1362: English made the official language in England. 1363: Timur (Tamerlane) begins his career of conquest in Asia. 1368: Ming dynasty in China. 1377: Pope returns to Rome, End of Babylonish Captivity.

Peasants Revolt. 1381. Peasants Revolt in England. 1398. Timur invades North India. 1415: Battle of Agincourt; Henry V of England gains a decisive victory over France. 1429: Joan of Arc leads the French army and takes Orleans. 1431: Joan of Arc burnt at stake as a witch. 1438: Albert establishes the Hapsburg dynasty. 1453: Turks capture Constantinople and end the Byzantine or the Eastern Roman empire; End of the Hundred Years' War.

1455: First battle of St. Albans; Beginning of the Wars of the Roses in England. 1469: Marriage of Ferdinand of Aragon with Isabella of Castile and the formation of the modern kingdom of Spain.1485: Battle of Bosworth Field. Beginning of Tudor period in England.

Colonisation. 1488: Bartholomew Diaz rounds Cape of Good Hope. 1492: Christopher Columbus discovers the West Indies; Spain captures the last Muslim stronghold in Europe. 1497: John Cabot discovers Newfoundland.

1498: Vaso da Gama reaches Calicut by sea. 1499: Amerigo Vespucci charts part of the South American coast. 1500: Bedro Cabral discovers Brazil. 1517: Martin Luther begins Reformation; Turks conquer Egypt. 1520: Suleiman the Magnificent becomes Sultan of Turkey; Turkish power at its height. 1521: Cortes conquers Mexico. Turks capture Belgrade. 1523: Swedes expel Danish overlords and elect their own king.

Mughul Empire. 1526: Battle of Panipat; Babar founds Mughul Empire in India. 1532: Francisco Pizarro conquers Peru. 1533: Ivan IV (the Terrible) becomes Czar of Russia. 1534: Act of Supremacy; Hency VIII assumes control over English Church. 1542: First Portuguese sailors reach Japan. 1545: Opening of the Council of Trent.

1556: Akbar becomes Mughul Emperor. 1557: Macao becomes permanent Portuguese port in China. 1558: Elizabeth I becomes Queen of England. 1577: Drake begins voyage round the world returning by 1580. 1579: Union of Utrecht; Formation of the modern Dutch state. 1582: Pope Gregory XIII introduces (New style) Gregorian Calendar. 1585: Hideyoshi, dictator of Japan, unifies the country.

1588: English defeat the Spanish Armada. 1598: Edict of Nantes; French Protestants given liberty of worship; End of French Wars of Religion. 1600: English East India Company formed. 1602: Dutch East India Company founded. 1603: Union of English and Scottish Crowns; James VI of Scotland becomes James I of Britain. 1605: Gun powder Plot.

1611: Publication of the Authorised Version of the English Bible. 1613: Michael Romanov becomes Czar of Russia and establishes the Romanov dynasty. 1620: Pilgrim Fathers settle in New England. 1624: Richelieu becomes Chief Minister in France. 1628: Petition of Rights in England. 1636: Japanese forbidden to go abroad. 1641: Japanese exclude all foreigners from Japan, except small Dutch trading ships. 1642: Outbreak of the English Civil War between Royalists and Cavaliers. 1644: Ching dynasty (Manchu) in China.

Cromwell. 1649: Charles I of England executed; Cromwell becomes Protector of England. 1652: The Dutch establish Cape Colony. 1660: Restoration of monarchy in Britain; Charles II founds the Royal Society. 1661: Mazarin, who succeeded Richelieu as the Chief Minister of France, dies; Louis XIV takes over the government in person.

1655: Great Plague of London. 1666: Great Fire of London. 1688: Glorious Revolution in England; James II abdicates the British throne. 1689: Bill of Rights in England. 1694: Founding of the Bank of England. 1696: Peter the Great becomes Czar of Russia. 1701: War of Spanish Succession begins. Duke of Marlborough leads the English army on the continent. 1704: Marlborough wins the Battle of Blenheim.

1721: Robert Walpole becomes the first Prime Minister of England. 1739: Nadir Shah of Persia sacks Delhi; War of Jenkins' Ear begins between Spain and Britain. 1740: Frederick the Great becomes King of Prussia; Maria Theresa succeeds to the Austrian throne; Beginning of the War of Austrian Succession. 1751: Clive takes and holds Arcot in India and checks French advance; Chinese conquest of Tibet.

1756: Seven Years' War begins. 1757: Clive conquers Bengal. 1760: Battle of Wandiwash; The English defeat the French in India. 1762: Catherine II becomes Czarina in Russia. 1770: James Cook discovers New South Wales. 1773: "Boston Tea Party". 1776: American Declaration of Independence. 1787: The drafting of the American Constitution.

French Revolution. 1789: French Revolution begins; Storming of the Bastille (July 14); George Washington becomes the first President of USA. 1792: France becomes a Republic. 1793: Louis XVI beheaded. 1794: Fall of Robespierre in France. 1795: Napoleon Bonaparte disperses Paris mob (Oct. 5).

1796: First Italian campaign of Bonaparte. 1798: Battle of the Nile. 1804: Bonaparte becomes Emperor. 1805: Battle of Trafalgar and Nelson's death; Battle of Austerlitz (Dec. 2). 1807: Napolean controls all Europe; Slave trade abolished in British Empire. 1808: Peninsular War begins. 1812: Napoleon's retreat from Moscow.

1815: Battle of Waterloo, Napoleon sent to St. Helena. 1823: President of USA announces "Monroe Doctrine." 1832: First Reform Bill in England. 1833: First British Factory Act. 1837: Queen Victoria succeeds to the British throne. 1840: Introduction of the penny postage in England (see Box). 1846: Repeal of the Corn Laws and the resignation of Peel.

Marx & Engels. 1848: Louis Philippe of France abdicates; Second French Republic proclaimed; *Marx and Engels publish the Communist Manifesto;* Gold discovered in California. 1849: Britain annexes the Punjab. 1851: Submarine telegraph cable between Dover and Calais; Discovery of gold in Australia.

1852: Napoleon III becomes Emperor of France. 1853: Commander Perry lands in Japan. 1854: Crimean War. 1856: Livingstone completes journey across Africa. 1857: First war of Indian Independence. 1858: British Crown assumes Government of India.

1861: Abraham Lincoln becomes President of United States; American Civil War. 1862 Bismarck becomes the Chief Minister in Prussia.

No to Slavery. 1865: Abolition of Slavery in USA; Assassination of Lincoln 1867: Dominion of Canada established Russia sells Alaska to America; Second Parliamentary Reform Bill in England. 1868 Shogunate abolished in Japan; Meiji period of rapid westernisation under imperia leadership begins.

Pyramid of Mystery

Two Frenchemen are trying to solve the mystery of Egypt's great pyramid of Giza by drilling holes through the stonework, but their method has roused a bitter controversy.

Architects Gilles Dormion and Jean-Partice Goidin are hoping to discover a secret chamber housing the mummy of the Cheops, the pharaoh who built the 138 metre- high pyramid.

Mr Dormion and Mr Goidin who visted the pyramids as tourists when they passed through Cairo in 1984 noticed what their professional training told them were irregularities in the stone strcture of a narrow corridor leading to the "queen's chamber".

The architects obtained French and Egyptian Government backing to test their theory that these signalled the presence of a secret chamber.

Their method was to drill holes into giant limestone slabs in search of cavities they hoped would lead them to the undiscovered mummy.

Egyptologist Fathi el-Badwayi warned of the dangers of tempering with the pyramid, one of the wonders of ancient world, and a French expert branded the search "grotesque and groundless".

1869: Opening of the Suez Canal. 1870: Promulgation of the Doctrine of Papal Infallibility. - 1871: Franco-Prussian War, Defeat of France by Prussia; Trade Unions in Britain legalised. 1874: Disraeli succeeds Gladstone as Prime Minister. 1875: England purchases Suez Canal shares. 1878: Second War with Afghanistan ended. 1884: Third Parliamentary Reform Bill in England.

1886: Britain annexes Upper Burma; Completion of Canadian Pacific Railway; Discovery of gold in Transvaal. 1894: Japan decalres war on China. 1895: Japan occupies Formosa and Korea. 1899: Boer War begins. 1900: Australian Commonwealth proclaimed. 1902: End of the Boer War. 1904: Russo-Japanese War begins. 1905: Russo-Japanese War ends by the Treaty of Portsmouth; Norway separates from Sweden.

1906: First Parliament in Russia. 1907: New Zealand becomes a Dominion. 1909: Union of South Africa formed. 1911: Chinese Revolution; Amundsen reaches South Pole (Dec. 14). 1912: China becomes a Republic under Sun yat Sen; The Titanic disaster.

World Wars. 1914: Archduke Francis Ferdinand of Austria assassinated at Sarajevo (June 28); Serbia suspected of complicity; Austria declares war on Serbia (July 28); The beginning of the first world war; Germany declares war on Russia (Aug. 1), on France (Aug. 3), and invades Belgium (Aug. 3); England declares war on Germany (Aug. 4); Austria declares war on Russia (Aug. 6); Japan declares war on Germany (Aug. 23). Battle of the Marne between France and Germany (Sept. 6-10); German advance halted. Russia declares war on Turkey (Nov. 2); England and France follow suit (Nov. 5).

1915: Germans start air attacks and submarine blockade against Britain; Germans sink American ship Lusitania (May 7). 1916: Battle of Verdun (Feb. 21—July 11). France stops German advance; Battle of Tannenburg; Russian armies humbled by Germany (Aug. 25); Battle of Jutland; Britain breaks German naval strength (May (31), Battle of Somme. France keeps her lines against Germany (July 1—Nov. 18); Lloyd George, Premier, forms war cabinet in Britain; Germans advance on the Eastern front; Vilna falls (Sept. 18). Rasputin, the rascal Russian monk, assassinated by Prince Felix Yussupov (Dec. 30).

Bolshevik Russia. 1917 Russian troops mutiny in Petrograd (March 10); Provisional government formed in Russia – Czar Nicholas II abdicates (March 15), USA declares war on Germany (April 16), Bolshevik Revolution begins in Russia (Nov. 6), Armistice concluded between the Revolutionary Government in Russia and Germany (Dec. 5).

1918: Treaty of Brest-Litvosk between Germany and Bolshevik Russia (March 3). British capture Jerusalem (Dec. 8), Czar, Czarina and children executed at Ekateringburg. Revolution breaks out in Germany; Emperor William II abdicates; German Republic proclaimed (Nov. 9). 1919: Peace conference opens in Paris (Jan. 18); Benito Mussolini founds Italian Fascist Party; Jalianwalla massacre in India (April 13); Treaty of Versailles signed (June 28).

League of Nations. 1920: First meeting of the League of Nations. 1921: Formation of the Irish Free State. 1922: Mussolini marches on Rome and the Fascist Party takes over the Government of Italy. 1923: Turkish Republic proclaimed under Kemal Pasha.

1924: The first Labour Ministry in Britain under MacDonald; Greece becomes a Republic; Lenin dies (Jan. 21). 1927: Col. Lindbergh flies across Atlantic. 1928: Capt. Kingsford Smith flies across Pacific. 1929: Wall Street Crash; The beginning of the Great Depression. King Amanullah of Afghanistan abdicates.

Coming of Hitler. 1933: Hitler appointed Chancellor by Hindenburg; German Reichstag set on fire (Feb. 27). 1934: Austrian Chancellor Dollfuss murdered (July 25); Hindenburg dies and Hitler becomes dictator. 1935: Italy starts war against Ethiopia. 1936: Italians occupy Addis Ababa; Civil War breaks out in Spain; King Edward VIII of England abdicates; Duke of York succeeds King Edward as King George VI.

1938: Munich Agreement between Chamberlain (England), Daladier (France), Hitler (Germany) and Mussolini (Italy). 1939: General Franco establishes dictatorship in Spain (Feb.); Germans invade Poland; Germans and Russians partition Poland; Second World War begins (Sept.). 1940: Germany invades Denmark, Norway, Holland, Belgium and Luxembourg; British evacuation from Dunkirk; Germans occupy Paris; Russians occupy Lithuania, Latvia and Estonia; France surrenders to Germany (June).

1941: Germany attacks Russia (June); Japanese attack on Pearl Harbour (Dec. 7); Japanese occupy Malaya, Philippines and Sarawak.

The Allies Win. 1942: Japanese navy defeated by US fleets off Midway Island (June); Battle of El Alamein (October 23); The Allies rout German forces; The Germans retreat. 1943: Axis Powers – Germany, Italy and Japan – in retreat all over the war zones; Mussolini resigns; Italian Fascist Party is dissolved; Churchill, Roosevelt and Stalin, leaders of the victorious Allies, meet at Teheran.

1944: Allies enter Rome; Allies liberate France, Belgium, Holland and Bulgaria. 1945: Americans invade Okinawa; Japanese Cabinet resigns: President Roosevelt dies (April 12); Mussolini and his mistress shot dead by Italian partisans (April 28); Hitler and his mistress Eva Braun commit suicide (April 30); German forces surrender to Allied armies (May 8).

POST WORLD WARS

The signing of the United Nations Charter in 1945 was a landmark in man's quest for peace and world amity. After 40 years of its existence, the world community is now taking stock of its achievements and failures. (For U.N. see chapter on International Organisations.)

The UN Charter was signed at San Francisco on June 26; 1945: Labour Party wins British elections (July 26); Atomic bomb dropped on Hiroshima (Aug. 6); Second atom bomb dropped on Nagasaki (Aug. 9); Japan surrenders to USA; The end of the Second World War; Trial of major war criminals opens at Nuremberg (Nov. 20).

1946: The first regular session of the UN Assembly held in London (Jan.); Trygve Lie elected the first Secretary General; Formal winding up of the League of Nations; Meeting of the UN General Assembly in New York (Oct. 23); Nuremberg sentences on Nazis executed; Goering commits suicide.

1947: Indonesia becomes free; India and Pakistan assume Dominion status (Aug. 15); The partition of Palestine approved by the UN; King Michael of Romania abdicates; Romania becomes a Republic.

Gandhiji Dead. 1948: Burma becomes a Republic; Gandhiji assassinated (Jan. 30); Ceylon becomes independent; C. Rajagopalachari succeeds Mountbatten as the Governor General of India; Jews proclaim the new State of Israel in Palestine. 1949: General Mao-Tse-Tung proclaims the People's Republic of China; Chinese Nationalist Government sets up headquarters in Formosa; United State of Indonesia comes into being.

1950: The proclamation of the Republic of India (Jan. 26); The Korean War begins; George Bernard Shaw dies aged 94 (Nov. 2). 1951: Libya becomes independent. 1952: King George VI of Great Britain dies and is succeeded by his daughter Elizabeth II; Olympic Games open at Helsinki (July 1).

1953: Stalin dies aged 74 (March 6); Dag Hammarskjold elected Secretary General of the UN; Hillary and Tensing conquer Everest (March 29); Korean armistice signed. 1954: Formation of the Federation of Rhodesia and Nyasaland; French settlements in India pass under Indian control. 1955: Marshal Bulganin succeeds Malenkov as Chairman of the Soviet Council of Ministers; Churchill resigns Prime Ministership and is succeeded by Anthony Eden; Afro-Asian Conference at Bandung; Albert Einstein dies (April 18).

Suez Nationalised. 1956: Sudan becomes an independent Republic; Pakistan proclaims itself an Islamic Republic; France leaves Indo-China; Col. Nasser becomes President of Egypt; Nationalisation of Suez Canal by President Nasser; Revolt in Hungary against communist regime; Russia sends troops to Hungary to quell the revolt.

1957: Saar added to the German Federal Republic; Polish Communist Party under Gomulka comes to power in Poland; Ghana becomes independent; Tunisia becomes a Republic; First Earth satellite (Sputnink I) launched by Russia.

1958: The first American Earth satellite Explorer I launched; Iraq becomes a Republic; French Guinea becomes an independent Republic. 1959: Batista Government in Cuba overthrown by Fidel Castro; Alaska becomes the 49th State of USA; inauguration of the Fifth French Republic under De Gaulle; the Chinese occupy Tibet; Dalai Lama flees to India; Bandaranaike, Prime Minister of Ceylon, assassinated; Archbishop Makarios elected first President of Cyprus.

1960: Cameroon, Togo, Belgian Congo, Ghana, Cyprus, Somalia and Nigeria become independent Republics. Congo (Brazzaville), Chad, Central African Republic and Malagasy become independent. Olympics at Rome (Aug.); Nigeria bcomes an independent Republic in the Commonwealth.

1961: Rwanda and Burundi in Africa become Republics; Sierra Leone and S. Cameroon become independent; South Africa becomes a Republic and withdraws from the Commonwealth; Conference of non-aligned nations at Belgrade; Syria secedes from the United Arab Republic; Tanganyika becomes independent within the Commonwealth; India annexes the Portuguese enclaves Goa, Daman and Diu.

Ne Win in Power. 1962: General Ne Win seizes power in Burma; China begins attack on India's norther frontier (Sept. 19); U Thant elected Secretary General of United Nations (Nov. 30); 1963: China and Pakistan sign frontier treaty; Egypt, Syria and Iraq form Arab Federation; Malaya, Singapore and South Borneo form Malaysian Federation; The assassination of President John F. Kennedy in Dallas, Texas (Nov. 22); Zanzibar becomes independent.

1964: Agreement signed between Tanganyika and Zanzibar forming a new State, Tanzania; Jawaharlal Nehru, Prime Minister of India, dies (May 27); Malta becomes independent; Soviet Premier Krushchev ousted; Alexei Kosygin becomes Premier and Leonid Brezhnev, Secretary of the Communist Party; Olympiad at Tokyo (Oct.)

1965: Field Marshal Ayub Khan is elected President of Pakistan; Indonesia withdraws from UN (Jan. 5); Sir Winston Churchill is dead (Jan. 24); Dr. Albert Schweitzer is dead (Aug. 15); Rhodesia seizes independence;

Mobutu takes over in a bloodless coup in the Congo; Soviet President Anastas Mikoyan steps down; Nikolai Podgorny is the new President.

Nkrumah Ousted. 1966: Army takes over the Government of Ghana, deposes President Nkrumah; Sukarno (Indonesia) hands over power to Army Chief Suharto (Mar. 12); Guyana (Guiana) becomes independent; South Africa's Prime Minister Dr. Verwoerd assassinated.

1967: India signs International Space Treaty in Moscow; Gen. Suharto becomes President of Indonesia; Konrad Adenauer, former West German Chancellor, dies; Nassar blocks gulf of Aquaba, Israel's vital sea outlet; Eastern Nigeria secedes to become Biafra Republic. Israel strikes a pre-dawn blow on UAR, Syria and Jordan and captures Gaza, Sinai and Jerusalem. Fighting ends in Suez Canal area with acceptance of cease-fire; Russia celebrates the 50th anniversary of the Bolshevik Revolution.

1968: South Pacific Island of Nauru and Mauritius become independent. Martin Luther King assassinated (Mar. 5); Soviet Union and Warsaw Pact countries forces invade Czechoslovakia; Swaziland becomes independent; the 19th Olympic Games open in Mexico City (Oct. 9); Equatorial Guinea becomes independent.

Man Lands on Moon. 1969: Mrs. Golda Meir becomes Prime Minister of Israel; President Ayub Khan hands over power to the Army Commander Gen. Yahya Khan; Dwight D. Eisenhower (78), former US President and Supreme Commander in World War II, dies (Mar. 28); U.S. astronauts Neil Armstrong and Edwin Aldrin set foot on the Moon (July 21). President Dr. Ho Chi Minh (79), the Father of North Vietnam, passes away (Sept. 4).

1970: The 30-month-fighting for a separate Biafra collapses. Bertrand Russell (97) passes away (Feb. 3); Former Portuguese dictator Antonio Salazaar (81) passes away (July 27); President Gamal Abdel Nasser (52) dies (Sept. 29); Charles de Gaulle (79), former President of France, dies (Nov. 10); Defence Minister Hafez Assad seizes power in Syria (Nov. 14); Soviet Lunokhod 1 lands on Moon. (Nov. 17); Awami League led by Sheik Mujibur Rahman gets absolute majority in Pakistan's first general election.

Bangladesh Born. 1971: Inauguration of the Aswan Dam in Egypt (Jan. 15); Gen. Idi Amin ousts President Milton Obote in Uganda (25); Apollo 14 astronauts Shepard and Mitchell land on the Moon (Feb. 2); Mujibur Rahman declares Bangladesh independent (Mar. 26); Mujibur Rahman arrested by the Pakistan army; Russia sends up Salyut I; Soyuz X links with Salyut in space (April 19); Apollo 15 launched (Aug. 8); Nikita Krushchev dies (Sept. 11); China admitted to the UN; Taiwan expelled (Oct. 25); United Arab Emirates formed (Dec. 2); Pakistan attacks India from the west (3); India recognises Bangladesh; Pakistan army in Bangladesh surrenders (16); Indo-Pakistan war ends (17); Yahya Khan resigns Pakistan Presidentship, Bhutto becomes President (20); Dr. Kurt Waldheim appointed UN Secretary General.

1972: Bhutto releases Mujibur Rahman (Jan. 8); Pakistan leaves Commonwealth (Apr. 21); President Nixon visits Moscow (May 22); Fourth Conference of non-aligned nations meets in Georgetown, Guyana (Aug. 8); Twentieth Olympics open at Munich (26); Bloodbath in Olympic village; Arab guerillas kidnap and kill Israeli sportsmen; Nixon elected President for a second term (Nov. 8).

1973: Britain joins E.C.M. (Jan. 1); Awami League led by Mujibur Rahman wins first election in Bangladesh (Mar. 2); Pablo Piccasso dies (April (8); Bahamas becomes independent (July 10); Afghanistan ends monarchy and becomes a Republic (18); W. Germany, East Germany and Bahamas become U.N. members (19); War breaks out in West Asia between Israel and Egypt and Syria (Oct. 6); Ceasefire in West Asia (22); David Ben Gurion, first Prime Minister of Israel, dies (Dec. 1).

Nixon Resigns. 1974: Mohommadulla elected President of Bangladesh (Jan. 24); Libya nationalises American oil companies (Feb. 11); Pakistan recognises Bangladesh (22); Emperor Haile Selassie deposed (27), Jigme Singye Wangchuk crowned King of Bhutan (June 2); Cyprus army overthrows President Makarios (July 15); Nixon resigns presidency; Gerald Ford takes over as the 38th President of USA (Aug. 9); UN admits

Bangladesh, Guinea-Bissau and Grenada as members; Labour wins British elections with a narrow majority (Oct. 11). U. Thant, former UN Secretary General, dies in Burma (25); Malta becomes a republic (Dec. 15).

1975: Mujib assumes full powers as President; One-party rule in Bangladesh (Jan. 25); Margaret Thatcher elected first woman leader of the British Conservative Party (Feb. 11); P. G. Wodehouse dead; Julian Huxley dead (14); Birendra crowned King of Nepal (Mar. 6); King Faisal of Saudi Arabia assassinated (25); Taiwan's President Chiang Kaishek dead (April 5); Saigon surrenders to communists (30); Mrs. Junko Tabei (36) of Japan becomes the first woman mountaineer to scale Mt. Everest (May 17); Eisaku Sato, former Prime Minister of Japan and Nobel Peace Laureate, dead (June 2); Suez Canal reopens after eight years (5).

Mozambique becomes free after nearly 500 years' Portuguese rule (July 6); Sao Tome and Principe Islands off the west coast of Africa achieve independence from Portugal (12); Soviet 'Soyuz' and American 'Apollo' space ships link up in space (17); Army coup in Bangladesh; Mujibur Rahman killed; New regime under Khondekar Mushtaq Ahmed (Aug. 15); Israel signs agreement with Egypt (Sept. 1); Papua (New Guinea) becomes free (15); Special UN session adopts plan for new world economic order (16); The Nobel Peace Prize goes to father of Soviet hydrogen bomb, Dr. Sakharov (Oct. 9); 'Venus'-9 softlands on planet Venus while module becomes satellite; Arnold Toynbee dead (22); Angola becomes free from Portuguese rule; Spanish dictator Franco dead (Nov. 20); Juan Carlos becomes King of Spain (22); Laos becomes a Republic (Dec. 3).

Indo-Soviet Treaty. 1976: Premier Chou En-lai of China dies (Jan. 8); Paul Robeson dies (23); British PM Harold Wilson announces resignation (Feb. 16); Military chiefs take over in Argentina, arrest Mrs. Peron and dissolve Parliament (24); James Callaghan is new British PM. Hua Kuo-feng made Chinese Premier (April 7); Mrs. Gandhi and Brezhnev sign Moscow declaration to further freindship, co-operation (June 11); Vietnam is unified (24); Seychelles becomes independent (29); Airborne Israeli Commandos destroy Ugandan planes, kill 100 Ugandans and free Air France Air-bus passengers from hijackers at Entebe, Uganda (July 4); Over 9000 dead in Iran earthquake of June 26 and 28 (8); Exodus by 16 African nations as Montreal Olympics open reduces the games to a virtual "White affair" (17).

US Probe lands on Mars (20); Soares heads first democratic Government in Portugal (23); Non-aligned summit opens at Colombo (Aug. 16); Second World Hindi Conference in Mauritius; Khan Abdul Ghaffar Khan is released in Pakistan (28); Mao Tse-tung dies (Sept. 9); Hua Kuo-feng succeeds Mao (9); Mao's widow Mrs. Chiang Ching and three top radicals arrested (12); India elected to UN Security Council (23); In East Turkey 3000 die in earthquake (24); Sir Sewoosagur Ramgoolam forms Coalition Government in Mauritius (Dec. 23); Takeo Fukuda succeeds Miki as Japanese PM (24).

Carter President. 1977: Jimmy Carter sworn in President of the United States (Jan. 20); Mohammed Daud sworn in President of the Republic of Afghanistan (Feb. 17); Bhutto's People's Party wins landslide victory in Pak Polls (March 8); Maj. Gen. Ziaur Rahman sworn in new Bangladesh President (April 21); Ludwig Erhard, former West German Chancellor dead (May 6); Leonid Brezhnev elected Soviet President (June 16); Djibouti becomes independent (27).

Coup in Pakistan; General Zia-ul-Haque takes over. Bhutto deposed and arrested (July 5); Ruling (Sirimavo's) Party routed in Sri Lanka Poll – Jayawardene become Premier (22); Bhutto released. Cyprus President Archbishop Makarios dies (Aug. 3); Ian Smith wins election in Rhodesia (Sept. 1); Bhutto arrested again in murder case (3); North Yemen President and brother assassinated (Oct. 12); Lufthansa plane hijacked; West German anti-guerilla squad kills three hijackers and frees hostages in historic action in Mogadishu on October 18 (13); US withdraws from ILO (Nov. 2); President Sadat of Egypt makes historic visit to Israel (19); Arab front against Egypt formed (Dec. 4); Charlie Chaplin dead (25)

1978: Jayawardene sworn in as First President of Sri Lanka (Feb. 4); Two Russian cosmonauts set up record with 84 days in space (Mar. 4); Bhutto appeals against death sentence (25); Military junta seizes power in

Afghanistan (Apr. 27); Zia-ur-Rahman wins Bangladesh Presidential election (June 4); Argentina wins World Cup Football beating Holland, 3-1 (25); Coup in South Yemen (26); Army officers seize power in Mauritania (July 10).

First test-tube baby born in Oldham, U.K. (25); Commonwealth Games at Edmonton, Canada (Aug. 3); President Jomo Kenyatta of Kenya dies (22); Zia-ul-Haque sworn in as President of Pakistan (Sept. 16); Peter William Botha elected South African P.M. (26); Daniel Arap Moi elected President of Kenya (Oct. 6); 900 bodies of victims of suicide by a religious sect found in Guyana (Nov. 20); Golda Meir dies (Dec. 8); Asian Games begin in Bangkok (9).

Year of the Child. 1979: International Year of the Child opens (Jan. 1); Shah leaves Iran (16); Ayattolla Khomeini returns to Iran after 14 years of exile (Feb. 1); Iran proclaimed Islamic Republic (Apr. 1); Bhutto executed (4); Idi Amin overthrown in Uganda (11); Greenland gets home rule (May 1); Margaret Thatcher becomes the first woman Prime Minister of Britain (4); 'Bhaskara' launched from Soviet Union (June 1); Salt II agreement signed by Carter and Brezhnev in Vienna (18); Skylab plunges down off the western Australian coast (July 11); Mountbatten killed in an explosion off Ireland (Aug. 27); Sixth Non-Aligned Conference opens in Havana (Sept. 3); Emperor Bokassa of the Central African Empire overthrown in coup (21); Army seizes power in Bolivia (Nov. 1); Iranian students occupy US Embassy in Teheran and holds the residents as hostages (4); Muslim extremists seize Kaaba Mosque in Mecca (21); Hafizulla Amin of Afghanistan killed in a coup (Dec. 27).

1980: U.S. halts grain shipments to Russia in retaliation to the latter's occupation of Afghanistan (Jan. 5); Trudeau returns to power in Canada (Feb. 19); Army seizes power in Surinam (25); Jesse Owens, American Olympic Champion, dies (Mar. 31); Jean Paul-Sartre, French philosopher and writer, dies (April 16); Free Zimbabwe born (17); U.S. attempt to free hostages in Iran fails (22); Marshal Tito of Yugoslavia dies (May 4); China admitted to the World Bank (16); China successfully tests long-range rocket (ICBM) (18); Japanese P.M. Ohira dies; Suzuki new P.M. (June 12).

Moscow Olympics begin (July 19); Polish workers wrest right to strike (Aug. 30); Regional meeting of Commonwealth Heads of Governmnet (CHOGRAM 2) opens in Delhi (Sep. 4); Hua resigns Premiership of China; Zhao Ziyang takes over (6); Libya and Syria announce merger (10); Quake in Algeria kills 20,000 (Oct. 10); Emergency proclaimed in Sri Lanka (14); Mrs. Bandaranaike stripped of civic rights (16); Kosygin resigns as Soviet Premier (23); Ronald Reagan elected U.S. President in a landslide victory over Jimmy Carter (Nov. 5); Trial of 'Gang of Four' begins in Beijing (20); Coup in Upper Volta (25); Kosygin, former Soviet Premier, dies (Dec. 19).

Reagan in Power. 1981: International year of disabled persons begins (Jan. 1); Banking Islamised in Pakistan (2); Left-wing guerillas in El Salvador form Govt. in exile (13); US resumes military assistance to junta in El Salvador (15); Fifty-two American hostages fly out of Teheran after 444 days of captivity; Ronald Reagan takes charge as the 40th President of the United States (22); China's special court sentences Mao's widow Jiang Qing to death for treason, but reduces sentence to two years of solitary confinement and hard labour (25); Ancient flag of the Jaffna Tamil Kings unfurled in Jaffna after 400 years; Roy Panther, amateur astronomer, discovers Panther's comet; Polish P.M. Jozef Pinkowski resigns; Gen. Jaruzelski succeeds (Feb. 10).

Mujibur Rahman's daughter, Begum Hasina elected President of the Bangladesh Awami League (18); Former Argentine President, Mrs. Maria Estela Peron sentenced to eight years in prison (March 20); All political parties in Pakistan dissolved (24); Reagan shot at, but survives assassin's bullet (31); "Ordinary People" directed by Robert Redford wins Oscar award for the best film (April 1). U.S. Space Shuttle, Columbia, with two astronauts blasts off from Cape Canaveral (12).

Pope Shot at. U.S. lifts grain embargo against USSR (Apr. 24); U.S. decides to back Kampuchean rebel forces; (May 3); IRA hunger striker Bobby Sands dies for the cause of prison reforms; President Heng Samrin and his colleagues returned by majority (5); Socialist Party Chief Francois

Mitterrand wins French Presidential election (10); Pope John Paul shot at in Vatican City (13); Pierre Mauroy named French Prime Minister (21); Zia-Ur-Rahman, President of Bangladesh and eight aides assassinated; Emergency proclaimed (30).

Sri Lanka proclaims state of emergency (June 4); House of Commons passes Britain's controversial new Nationality Bill (5); World's first twins conceived in a test-tube, a boy and a girl, are born to a 31-year-old woman in Melbourne's Queen Victoria hospital (6); Surya Bahadur Thapa takes over as Nepal Prime Minister (16); Sixty-nine of Iran's political leaders, including the Chief Justice, Ayatollah Mohammed Beheshti killed in bomb blast in Teheran; Chinese Communist Party Chairman Hua Guofeng is replaced by Hu Yabobang (28).

Mrs. Sandra Day O. Connor appointed the first woman judge of the U.S. Supreme Court (July 7); Mohammed Ali Rajai elected President of Iran to succeed Bani-Sadr (25); Paris gives asylum to Bani-Sadr; Prince Charles, heir apparent to the British throne, weds Lady Diana (29); Bani Sadr, deposed Iran President forms Govt.-in-Exile (August (3); Iran's President Mohammed Ali Rajai and Prime Minister Mohammad Banohar killed in bomb blast in the Prime Minister's office (30); Madhvi Kani named new Prime Minister of Iran; Belize becomes independent (Sept. 2); TGV, the world's fastest train at 270 Km per hour makes inaugural trip from Paris to Lyons (22); Army officers hanged in Bangladesh in connection with the assassination of President Zia-ur-Rahman in May (12).

Sadat Killed. Egyptian President Anwar Sadat assassinated by a group of soldiers during military parade in Cairo (Oct. 6); Hosni Mubarak sworn in Egypt's fourth President (14); Polish Communist Party leader Stanislaw Kania sacked (18); Socialist forces swept back to power in Greece (19); Cancun summit of 22 Government leaders ends on note of uncertainty and lack of agreement (24).

Antigua and Barbuda become independent (Nov. 1); U San Yu, retired Army General, succeeds U Ne Win as President of Burma (9); Javier Perez de Cueller, 61-year-old former Chief delegate of Peru, elected U.N. Secretary-General to succeed Dr. Kurt Waldheim (Dec. 12); Army takes over in Poland; emergency proclaimed and Solidarity leaders put in jail (13); Israel enacts new law to annex Golan Heights, occupied Syrian territory (14); U.S. President Reagan orders sanctions against Poland (24); Ft. Lt. Jerry Rawlings returns to power in Ghana overthrowing Dr. Limann in military coup (31).

Sinai Withdrawal. 1982: Egypt and Israel agree on final withdrawal of Israeli forces from Sinai (January 9); Soviet Communist Party Secretary Michael Suslov dies (25); Mauno Koivisto elected President of Finland (26); U.S. allows passage to Khalistan protagonist Jagjit Singh in spite of India's opposition (Feb. 9); India agrees to give long-term aid to Vietnam (13); Sri Lanka shifts capital to Jayawardenapura (15); Pakistan Foreign Minister Agha Shahi resigns due to ill-health (16); Zimbabwe Prime Minister Robert Mugabe sacks Joshua Nkomo, veteran nationalist from cabinet (17). South-South Conference inaugurated in New Delhi—44 nations take part; Julius Nyerere, Tanzanian President, presented the 1981 Third World Prize in New Delhi (22).

Soviet spacecraft Venus-13 lands on Venus (March 1); Charles Haughey becomes Irish Prime Minister (9); A rare tryst of nine planets in the same quadrant observed (10); National Liberation Council seizes power in Surinam (11); Army takes over government in Bogota (13); Britain and the Vatican resume full diplomatic relations after four centuries (19); Switzerland decides to join United Naitons (23); Lt Gen. H. M. Ershad seizes power in Bangladesh; Coup in Guatemala: Junta led by Gen. Efrain Rios Mont (24); A. F. M. A. Choudhary sworn in as Bangladesh President (27); Polling in El Salvador amidst fighting (28).

Argentina occupies Falkland Isles, a British colony in South Atlantic (April 2); British fleet leaves for Falklands (6); 10,000 feared dead in the eruption of the Chichonal volcano in Mexico (7); India signs deal for the purchase of 40 Mirage-2000s with France; Art Buchwald and John Updike win Pulitzer awards (15).

A new constitution for Canada comes into force (April 17); Dr. Mahathir Mohammed scores big win in Malaysian elections (23); Egypt officially gets back Sinai peninsula, 15 years after Israeli occupation (25); Britain recaptures South Georgia island off Falklands; Argentine Commander surrenders (26); Sea Law convention adopted (30).

Falkland War. Britain and Argentina accept UN proposals to end hostilities (May 6); U.K. Forces attack Falklands capital; Luis Alberto Monge becomes Costa Rican President (9). A manned Soviet spacecraft docks with orbiting Salyut-7 (15). U.K. troops land on Falklands (21). Iran announces recapture of Iraqi-occupied city of Khorramshahr after 20 months of Gulf war (24). Yasser Arafat, leader of the P.L.O. leaves Beirut (30). King Khalid of Saudi Arabia dies (June 13). Argentina surrenders to Britain in the Falklands (15). U.S. Secretary of State Alexander Haig resigns; Lebanese Prime Minister Shafiq-al-Wazzan resigns (25). Alitalia Airlines plane flying between Rome and Tokyo hijacked by Sri Lankan national, Sepala Ekanayake; PLO agrees to leave Beirut (30).

Dominican President A. Guzman dies (July 4). Miguel De La Madrid elected President of Mexico (5). Former Nepalese Prime Minister B. P. Koirala dies (21). Dr. Richard H. Lawler (86), Nobel Prize nominee, who performed the world's first kidney transplant dies (24). Italian Prime Minister, Giovanni Spadolini resigns (Aug. 7). U.N. World Assembly on Ageing unanimously adopts 48-point plan of action (9). Soviet Union launches into space a woman cosmonaut for a rendezvous with the orbiting space station Salyut 7 (18). P.L.O. pullout from Beirut begins (21). 40-year-old unamrried psychologist; Dr. Afton Blake, gives birth to the second baby to be produced with the help of 'Nobel' sperm bank (25). Ingrid Bergman (67) Swedish-born film actress dies (29).

Polish communist leader W. Gomulka dies (Sept. 1). Successful trial run in Japan of a new extra fast remote-controlled train which floats above the line on a magnetic field (2). World's highest submarine mountain discovered in the Samoan Archipelago by Soviet research ship 'Callisto' (12). Lebanon's President-elect Bashir Gemayel (34) is assassinated in a bomb explosion (15). Mass massacre in two Palestinian refugee camps, Chatilla and Sabra, in W. Beirut (18).

Solidarity banned. Conservative Opposition leader Helmut Kohl is elected Chancellor of W. Germany ousting Helmut Schmidt midterm through a parliamentary vote (Oct. 1). Poland's independent trade union Solidarity is dissolved by an Act of Sejm, the Parliament; Lord Noel Baker (92), Nobel Peace Prize winner and former Labour Party Cabinet Minister, dies in London (8). Dr. Anna Freud (86), a psychoanalyst and daughter of pioneer psychoanalyst Sigmund Freud, dies; U.S. experiences the worst phase of unemployment (10.1 per cent or 11,260,000 people out of work) in 42 years (9). Japanese Premier Zenko Suzuki resigns (12). Halley's comet sighted at Mt. Palomar near San Diego for the first time since it last zipped by the Earth in 1910; Iranian Supreme Court, last vestige of the former Shah's rule, abolished (16). Pierre Mendes-France (75) former French Premier and World War II resistance leader, dies (18).

Soviet President Leonid Brezhnev (75) dies in Moscow (Nov. 10). Lech Walesa, leader of outlawed Poland's Solidarity free trade union, is released after 11 months of internment; Yuri Andropov succeeds Brezhnev as General Secretary of the Soviet Communist Party; Astronauts of U.S. Space Shuttle Columbia release Canadian satellite fulfilling the first commercial contract to launch satellites (12). Seventyfive Israelis including the Prime Minister Menachem Begin's wife die in a building blast in Lebanon (14). Wu Xuequan replaces Huang Hua as Chinese Foreign Minister (19). Yasuhiro Nakasone is elected Japan's Prime Minister (26). Row in the U.N. over who discovered America puts off decision on whether to celebrate 500th anniversary of the arrival of Christopher Columbus in the new world; World Premiere of Sir Richard Attenborough's 'Gandhi' in New Delhi (30).

Miguel De La Madrid is sworn in President of Mexico, Amintore Fanfani, Christian Democrat, forms Italy's 43rd post-war Government (Dec. 1). Spain's first socialist majority parliament elects Felipe Gonzalez Prime Minister; Sixty-one-year-old Barney Clark, given an artificial heart (2). China adopts new constitution that replaces Maoist principles (4). China issues two stamps to mark 40th anniversary of the death of Dr. Dwarakanath Kotnis; Helicopter-borne South African troops raid Maseru, Lesotho's capital and kill

30 members of banned African National Congress (9). Soviet cosmonauts, Anatoly Berezevoi and Valentin Lebedev return to earth after 211 days in space, a new endurance record (10). Thousands of women from 15-Km human chain around U.S. Air Force base in Berkshire, U.K. in an anti-nuclear protest (12). The big green gate between the British colony of Gibraltar and Spain is reopened after 13 years (14).

New Delhi Summit. 1983: Former Soviet Head of State, Nikolai Podgorny (79) dies (Jan.12). More than a quarter million Ghanains leave Nigeria to return to homeland (31). Ariel Sharon resigns as Defence Minister of Israel (Feb. 11). Spyros Kyprianou re-elected President of Cyprus (14). OPEC forced to cut prices as Nigeria cuts oil price (21). Playwright Tennessee Williams (71) dies (25). Arthur Koestler (77), author of ***Darkness at Noon,*** dies (March 3). Bob Hawke, Labour Party leader is Australia's Prime Minister (5). Seventh Non-aligned summit opens at New Delhi, Indira Gandhi appeals for reversal of arms race (7). Prime Minister Indira Gandhi and Minister in charge of Family Planning in China, Qian Xiwzhong, win first UN Population Award (19). Barney Clark, world's first and only recipient of a permanent artificial heart, dies (23).

Border between Morocco and Algeria re-opened after a seven-year closure (April 5). Vietnam starts partial withdrawal of forces from Kampuchea (May 2). Newly discovered comet streaks to within five million Km of the Earth, closer than any other comet in more than 200 years (11). Soviet Union develops very advanced fighter in MIG series, a match to U.S. built F-16 (19). King Idris (93), former monarch of Libya, dies (25). Gerd Heidemann, the reporter who bought the forged Hitler diaries for *Stern* magazine, arrested (27).

Prime Minister Indira Gandhi addresses UNCTAD in Belgrade: (June 8). Three South African freedom fighters hanged in Pretoria (9). British Prime Minister Margaret Thatcher, leading the right wing Tories; returned to power for another five-year team (10). Pioneer 10 explorer leaves Earth's solar system to begin its endless voyage among the stars (13). Li Xiannian (78) elected Head of State by sixth National People's Congress (China's Parliament) (19).

Sheila Cameron, first woman Vicar General in Church of England (July 7). Lokendra Bahadur Chand (44) appointed Nepal's Prime Minister (12). Sri Lanka government announces death of 35 suspected Tamil terrorists and prisoners in a clash at Welikada jail (26). About 20,000 persons, displaced and rendered homeless following riots in Colombo (27). David Niven (73), British movie actor, dies (29). Sudanese President Jaafar Nimeri frees all 13,000 inmates in Sudan's jails (30).

Acquino Murdered. Members of Sri Lanka's main minority party, the Tamil United Liberation Front (TULF), declares boycott of parliament following new legislation on oath against separation (August 7). President Shehu Shagari wins second term in office in Nigeria (11). Philippines opposition leader Benigno S. Acquino Jr. returns from voluntary exile, shot and killed when he touches home ground (21). Prime Minister Aneerood Jugnauth's three party alliance wins massive victory in Mauritius', second elections (22). Space Shuttle Challenger takes off from Cape Kennedy with Indian satellite INSAT-1B aboard for deployment in space (30). South Korean Boeing 747, with 269 persons aboard, shot down by Soviets into Japan Sea; Daughter of Vatican official kidnapped two months earlier executed (Sep.1). Israeli Foreign Minister, Yitzhak Shaniv, chosen to succeed resigning Premier Minister Menachem Begin (2). John Vorster (67) former South African Prime Minister, dies in Cape Town (11). Ranjan (60), filmstar, dies in New Jersey, U.S. (12). Caribbean Islands of St. Kitts and Nevis become the world's newest nation, after gaining independence from Britain (19).

Walesa: Nobel Prize. Julius Nyerere, Tanzanian President, awarded the Nansen Medal, the highest honour of the UN High Commissioner for Refugees. Lech Walesa, leader of the outlawed Solidarity Free Trade Union in Poland, awarded the 1983 Nobel Peace Prize (Oct. 3). Willian Golding, British novelist, wins 1983 Nobel prize for literature (7). The former Japanese Prime Minister, Kakuei Tanaka found guilty of taking a 500-million-Yen (Rs. 2.2 crore) bribe from the Lockheed Aircraft Corporation and sentenced to four years in prision and a fine equivalent to the bribe. Prof. Subramanyam Chandrasekhar, India-born American, shares 1983 Nobel Prize for Physics with fellow American Prof. William Fowler (19). Maurice Bishop, Prime Minister of Grenada, shot dead and a round-the-clock curfew imposed (20). United States and a coalition of small Caribbean countries invade Grenada to eject the military junta in power there (25).

Raul Alfonsin of the Radical Civic Union Party elected President of Argentina. The Philippines President, Ferdinand Marcos, names the Prime Minister Cesar Virata his successor (31). The Turkish-controlled area of Cyprus declares unilateral independence (Nov. 15). Queen Elizebeth II, accompanied by husband, Duke of Edinburgh, arrives in Delhi on 9–day visit (17). Week-long Commonwealth summit opens in Delhi (23). The Queen invests Order of Merit on Mother Teresa (24).

Gen. Hussain Ershad proclaims himself President of Bangladesh (December 11). The ruling Liberal Democratic Party in Japan fails to win majority in Parliament, but forms Government with help of independents; former Prime Minister Tanaka, convicted on a bribery charge, re-elected from his constituency (19). Yasser Arafat and his supporters sail out of Lebanon, as a result of attacks by the rebel faction of the Palestine Liberation Organisation (20) U.S. notifies withdrawal from UNESCO (28).

ASAT Tested. 1984: Rev. Jesse Jackson, civil rights activist and aspirant for Democratic Presidential nomination, secures release of Lieut. Robert O. Goodman, American bombarder whose plane was brought down by Syria in Lebanon (Jan.3); Souvanna Phouma, (83) Laotian prince and former Prime Minister, dies (10); U.S. Supreme Court rules that the use of video records at home to tape television programmes and movies does not constitute an offence under the federal copyrights law (18); U.S. conducts its first test of a missile with the potential to destroy satellites (ASAT) in outer space, Johny Weissmuller (79), five–time Olympic swimming champion, dies (22); Sohrab Modi, veteran film actor, director, producer (86) dies (28);

Kashmir Liberation Army kidnaps Indian Asst. High Commissioner in Birmingham, R. Mhatre and later kills him (Feb.4); "Alice in Wonderland" in reality is Queen Victoria's autobiography, concludes a group of researchers after 11 years of study (5); Astronauts Bruce McCandless and Robert Stewart walk in space 280 km above the Earth to test "Buck Rogers" backpacks in the first free flights through space (7); U.S. withdraws 1,600 marines from Lebanon (8); Soviet President Yuri Andrepov dies (10); Konstantin Chernenko becomes new Soviet Communist Party Chief (13); Mikhail Sholokov, (78), Nobel Prize-winning author of "And Quite Flows the Don", dies (21).

Repair in Space. Canadian Prime Minister Pierre Trudeau announces intention to resign (1 March). Mother Teresa University, Kodaikanal, first Women's University in Tamilnadu, inaugurated by Mother herself (2). Mauritius Prime Minister Aneerood Jugnnauth inaugurates the first international conference on Sanskrit at Mahatma Gandhi Institute in Port Louis (15). Squadron leader Rakesh Sharma becomes India's first spaceman when he was launched aboard Soyuz T-11 from Baikhnur Cosmodrome in Kazakhstan along with two Russians (April 3). Col. Lansana Konte appointed President of Guinea and Col. Diara Traore, the Prime Minister (5). Kerala Government decides to drop Silent Valley Project and declare the entire area a National Park (13). Astronauts on board Space shuttle Challenger successfully retrieves disabled satellite Solar Max, repairs it and deploys it again completing world's first in-orbit retrieval and repair (12). Lebanese President Amin Gemayal returns to Beirut with Syria's backing to form a new government (20). Former Yugoslovia Presidet Milovah Djilas released (21). U.S. and China agree on nuclear co-operation (24). Sultan Iskander of Johore sworn in as eighth king of Malaysia (26).

Phu Dorjei conquers Mount Everest without oxygen- a rare feat (May 9). Miss Bachendri Pal becomes first Indian woman to conquer Mount Everest; Dr. Richard Van Weizasaedear, former Mayor of West Berlin, elected sixth President of W.Germany (23). Over 400 massacred by tribal insurgents at Chittagong Hill Tracts in Bangladesh (June 1). Indian Army takes control in Punjab to stem terrorist violence (2). Army storms the Golden Temple and other religious places to flush out terrorists; over 325 including Jarnail

Singh Bhindranwale killed (6). Enrico Berlinguer (62), Italian Communist Party leader, dies (11). Vietnam withdraws about 10,000 of its troops stationed in Kampuchea (15). John Turner sworn in as Canada's Prime Minister (30).

Change in Kashmir. Farooq Abdullah's Ministry dismissed in Srinagar and G.M. Shah sworn in as Chief Minister (July 2). Union Ministry reshuffled: Narasimha Rao appointed Home Minister (19). Golden Temple at Amritsar re-opened to pilgrims (27). Prime Minister Lange's Labour Party sweeps to landslide victory over Robert Muldoon's ruling National Party in New Zealand (14). Laurent Fabious appointed new PM in France (17). Bomb explosion at Meenambakkam Airport kills 32 (August 2). Leon Cordere sworn in as Equador's 38th President (12). N.T. Rama Rao's ministry dismissed by Governor Ram Lal and Bhaskara Rao sworn in as Chief Minister in Andhra Pradesh (16). R. Venkataraman elected 8th Vice-president of India (22). Tamil Nadu Food Minister S.D. Soma Sundaram, dismissed from the state cabinet (Sep.3). Bhaskara Rao resigns as chief minister of A.P. on governor's demand, and N.T. Rama Rao back in power (16). Brian Mulroney wins general election in Canada; Prime Minister P.W. Botha elected President of S.Africa (5). North and South Koreans open borders for the first time sine 1945(30).

Indira a Martyr. Unilateral ceasefire by Mizo rebels ordered by Laldenga (October 2). T.N. Chief Minister M.G. Ramachandran suffers a stroke (14). Indira Gandhi assassinated by 2 of her own security guards at her residence in New Delhi; Rajiv Gandhi sworn in as PM (31). Violence takes a toll of about one thousand in New Delhi following the assassination of Indira Gandhi; M.G.R. flown to New York in a special plane (Nov.3). Reagan re-elected US President with a record margin (7). Rajiv Gandhi elected Congress (I) President (12). Tamil Nadu Assembly dissolved (15). Andhra Pradesh Assembly dissolved; Rama Rao seeks fresh mandate (22). Y.B. Chavan (71), former Dy. P.M. dies (25). Ex-M.P. M.N. Govindan Nair (74) dies (27).

Bob Hawke wins general election in Australia (Dec.1) 2,500 persons killed due to inhalation of poisonous gas from Union Carbide plant at Bhopal; Dr. Narasimha God Bole (97), founding -father of Technical Education dies (5). Ashok Mehta, former Union Minister, dies (11). China and Britain sign agreement to transfer Hong Kong to China in 1997 (19). Gen. Zia-Ul-Haq seeks fresh mandate for five years as President (20). Polling for 8 Lok Sabha and Tamil Nadu Assembly (24). Indian Supertanker 'Kanchenjunga' carrying 20,00,000 tonnes of oil hit in the Gulf by missile (25). Ramakrishna Hegde, Karnataka Chief Minister, resigns and recommends dissolution of the Assembly, following the Lok Sabha poll verdict; AIADMK sweeps back to power in Tamil Nadu (29).

1985: The worst ever year for commercial aviation — around 2,000 killed — was only a few hours old when a plane crashed into a Bolivian mountainside, killing 29 (Jan. 1). Hun Sen elected Prime Minister of Kampuchea (14). Brazil elects Tancredo Neves to be its first civilian President in 21 years (15). Israeli army begins pullout from Lebanon (20). David Lean's film of E. M. Forster's novel 'A Passage to India' wins 3 Golden Globes at Hollywood (26). Oxford University votes against honorary degree for British Prime Minister Margaret Thatcher (29).

Novelist James Hadley Chase dead; Spanish airliner crashes killing 149 (Feb. 6). South Korean Opposition leader Kim Dae Jung manhandled at Seoul airport on his return from two years in the United Sates (9). Pakistan President Mohammad Zia-ul-Haq dissolves the Cabinet, following the defeat of 6 Ministers in national elections (26).

Gorbachev Leader. Julio Maria Sanguinetti sworn in President of Uruguay (March 1). British miners end their year-long strike; Earthquake kills more than 20 people in Chile (3). Soviet President Konstantin Chernenko dead. Mikhail Gorbachev elected General Secretary of the Communist Party (11). In Geneva the United States and the Soviet Union reopen arms talks after a chilly gap of 15 months (12). Brazilian President-elect Tancredo Neves falls ill and is rushed into emergency surgery hours before inaugural ceremony; Internationl science exposition opens in Tuskuba, Japan (16). Gen H. M. Ershad claims a Massive mandate to continue as President in a referendum in

Bangladesh (21). About 400 people on two boats drowned in a storm in Bangladesh. Gen. Mohammad Zia-Ul-Huq sworn in President and Mohammad Khan Junejo Prime Minister of Pakistan (23). Major Arthur Nicholson of the US mission in Potsdam, East Germany, shot dead by Soviet bullet in more than 20 years (25). Amadeus wins Oscar award for best picture (26). Singapore President C. V. Devan Nair resigns (28). Christos Sartzetakis elected President of Greece (30).

Sudanese president Jaafar Nimeiri overthrown in bloodless coup. Armed forces chief Abdel Rahaman Swareddahab comes to power (April 6). Albanian leader Enver Hoxha dead. He is succeeded by Ramiz Alia (11). US senator Jake Garn goes into orbit with six others on space shuttle Discovery (12). Brazilian President -elect Tancredo Neves dead. Acting president Jose Sarney becomes president (22). American climber Richard Bass, 55, becomes the oldest man to reach the summit of Mount Everest (30).

Football Tragedies. Fiftythree spectators killed in a fire at a football stadium in Bradford, England (May 11). Cyclonic strom and tidal waves hit coastal districts of Bangladesh. Thousands perish (24). Italy's Juventus beats England's Liverpool FC 1-0 in the European cup football final in Brussels after clashes, stampedes and a wall collapse in the stands killed 41 persons and injured about 350 (29).

Alan Garcia elected President of Peru (June 1). Andreas Papandreou reelected Prime Minister of Greece (2). Mohammad Zia-Ul-Haq becomes the first President of Pakistan to visit Bangladesh (5). Francesco Cossiga elected President of Italy (24). 39 Amercian hostages released in Beirut more than two weeks after Shiite Muslim gunmen hijacked their TWA Boeing 727 flying from Athens to Rome with 153 persons on board one Passenger was killed and the others were released earlier (30).

Andrei Gromyko elected President of the Soviet Union (July 2). 125 drowned as ferry sinks in Bangladesh (4). Robert Mugabe voted back to power in Zimbabwe (6). West German Boris Becker beats eighth seeded American Kevin Curren 6-3, 6-7, 7-6, 6-4 in the final of the Wimbledon tennis championship to become the first unseeded player to win the title. At 17 he is also the youngest and is in fact younger than the junior champion (7). The Rainbow Warrior, flagship of the ecological group Greenpeace, sinks after a bomb explosion, in Auckland harbour, New Zealand. One crewman is killed (10).

Emperor Hirohito becomes the oldest of 124 successive Japanese monarchs, crossing the 30,756 days that the 108th Emperor Gomizunnoo lived (13). World women's conference opens in Nairobi (15). West German novelist Helinch Boell dead (16). President Abdou Diouf of Senegal elected chairman of the Organisation of African Unity; Executed former Pakistan Prime Minister Sulfiqar Ali Bhutto's son Shanawaz Khan, 27, found dead at his home in Cannes, France (18). Dam burst kills 260 in Italy; Johnny, the only creature in the world with a lioness for a mother and a leopard for a father, dies at a zoo in Japan, at the ripe old age of 24 — around 112 years in human terms. He was one of seven "leopons" born since 1959. All the others were dead by 1977 (19).

Live Aid Concert. Persons, including Mr. Dambar Jang Garung, MP, killed in a series of explosions in Kathmandu; Telecast worldwide from London and Philadelphia, the 15 hours Live Aid concert, raised millions of dollars for famine relief in Africa (27). Lt Gen Tito Okello sworn in President of Unganda after Milton Obote was overthrown by rebel solders (29).

Delta Airlines Lockheed Tristar crashes in Dallas, USA, killing 130 (August 3). Victor Pas Estenssoro elected President of Bolivia (5). 43rd International Eucharistic Congress opens in Nairobi (11). Japan Air Lines Boeing 747 crashes near Tokyo, killing all but four of the 524 persons on board; Thomas Sankara, Chairman of the ruling revolutionary council of Burkina Faso, dissolves his Government and sends 19 of his 22 ministers out of the capital, Ouagadougou, to work on collective farms (12). Writer Shiva Naipaul dead (13). Ferry sinks in China, killing 174 (18). Ali Khamanei re-elected President of Iran (19). Samantha Smith, the US school girl who wrote to Soviet President Yuri Andropov about her fears of nuclear war and visited the Soviet Union on his invitation, dies in air crash in Auburn, USA (26). The Government of Maj Gen Muhammad Buhari overthrown in Nigeria, Maj Gen Ibrahim Babangida be-

WONDERS OF THE WORLD

1. The Pyramids of Egypt. These royal tombs which housed the dead Pharaohs of Egypt are about 70 in number and lie on the west side of the Nile beginning at Gizeh (Gisa) opposite Cairo and extend south for some 60 miles or so. They represent 1200 years of Egyptian history.

2. The Hanging Gardens of Babylon were near the Euphrates River, in the palace of King Nebuchadnezzar, 60 miles south of the present city of Baghdad, and not far from the eastern border of the Syrian Desert of Northern Arabia.

3. The Temple of Artemis (Diana), in Asia Minor at Ephesus, an ancient but now vanished city, was south of Smyrna. It was built in the fifth century B.C. by the Ionian cities, as a joint monument from plans drawn by the architect Ctesiphon.

4. The Tomb of Mausolus, King of Caria, in Asia Minor was at Halicarnassus, on the eastern side of the Aegean Sea. It was built of marble about 352 B.C. by Queen Artemisia.

5. The Colossus at Rhodes was a bronze statue of the Greek Sungod Helios, 70 cubits (about 109 feet) high, erected by Charles of Lindus at the port of the City of Rhodes on the island of Rhodes in the eastern part of the Mediterranean Sea.

6. The Statue of Zeus (Jupiter) was in the valley of Olympia, province of Elis, 12 miles or so inland from the west coast of the southern peninsula of Greece, which was then called the Peloponnesus.

7. The Pharos of Alexandria, a white marble lighthouse or watch-tower on the island of Pharos, in the port of Alexandria, Egypt was completed by King Ptolemy Philadelphus, 265-247 B.C.

Other Wonders:

The Sphinx, near Gizeh in Egypt, is a great wingless crouching lion hewn out of solid rock, 172.5 feet long, and 66 feet high. Between the two extended paws is a granite altar with inscriptions apparently indicating that it was built during the time of the Fourth Dynasty, around 2500 B.C.

The Great Wall of China, built in the third century B.C. extended along the northern frontier of the country, from the northern part of the Gulf of Chihli on the Yellow Sea, north of Peking, in a zigzag course, to Syning, on the border of Turkestan 3219 km. long.

Stonehenge is a circular assemblage of huge, shaped stones in Salisbury plain about 90 miles south west of London. The stones are arranged in two circles one within the other. 1800-1500 B.C.

The Catacombs at Rome were the sepulchres of the early Christians, and consisted of more than 40 groups of labyrinths, or galleries and chambers, covering 615 acres, sometimes, going down to 5 storeys (70 feet) below the surface of the ground.

The Circus Maximus at Rome, built 605 B.C. by King Tarquin and rebuilt and enlarged by Julius Caesar could hold 385,000 in the fourth century A.D.

The Coliseum, or Colosseum at Rome, one of the largest amphitheatres in the world, was begun by the Emperor Vespasian and finished by the Emperor Domitian in 82 A.D. Fifty thousand persons could sit and 20,000 stand.

Hagia Sophia or the Church of St. Sophia at Constantinople (Istanbul) was built as a Christian cathedral by the Roman Emperor Justinian in 531—538 A.D.

The Leaning Tower of Pisa is one of the wonders of the Middle Ages. It is a round, 8-storey bell-tower and was built of marble in 1154 A.D.; it is 188 feet high. Architect Bonannus of Pisa.

The Porcelain Tower of Nanking was built in that ancient capital of South China in the early part of the 15th century.

The Taj Mahal at Agra, popularly called The Taj, is a masterpiece of architecture that easily takes its place among the Wonders of the World. It is a mausoleum built by the Mughal Emperor Shah Jehan over the tomb of his wife, Empress Mumtaz Mahal. Its construction was started in 1631 and completed in 1653.

Angkor Wat or Nakhon Wat is a temple in Kampuchiea, dedicated to Vishnu. It was built during the reign of Suryavarman II. The temple is situated south of the Angkor city which was the capital of ancient Cambodia. The city built between 800 and 1200 A.D.

The Alhambra at Granada is a fortress in southern Spain was built by the conquering Arab Moors who established a Caliphate in Spain with Cordoba as the first capital. When the Christians reconquered Cordoba, the Caliphate capital was removed to Granada.

Shwe Dagon or the Golden Pagoda is a Buddhist shrine in the outskirts of Rangoon in Burma. It was probably built late in the 13th century or early in the 14th. The Pagoda is especially sacred to Buddhists because it enshrines 8 of Buddha's hairs.

comes President (27). Wee Kim Wee elected President of Singapore; Over 5,000 spectators in Madid give star matador Jose Cubsro, 21, "Yiyo", a standing ovation as he buries his sword in a bull's heart but they freeze into horrified silence as the bull, in a dying spasm knocks him down, stabs him through the back and holds him aloft. The previous bull ring death was about a year before this and it was Yiyo who later killed the bull which caused it (30).

Titanic Found. In Londn the Observer breaks the news that a secret expedition operating a robot submarine from the US navy ship Knorr had located, some 800 km south of Newfoundland, the wreck of the Titanic, which hit an iceberg and sank on April 14, 1912, taking 1,513 lives, the biggest single transport disater in history. Those killed included several millionaires and fabulous riches went down with the ship (September 1).

Representatives of the Kampuchean resistance reveal in Beijing that Pol Pot has retired from the post of military commander of the Khmer Rouge (2). Zimbabwe Prime Minister Robert Mugabe elected chairman of the Non-Aligned Movement (8). The International Cometary Explorer, an unmanned US space probe launched on August 12, 1978, and all but forgotton, becomes the first man-made object to pass through a comet. The ICE which took 15 minutes to slice through the tail of the Giacobini-Zinner, sent back valuable data on its position (11). Olof Palme re-elected Prime Minister of Sweden; More than 100 communist party veterans resign in China, making way for a reorganisation of the administrative set-up (16). Massive earthquake devastates Mexico City, killing around 10,000 people; Italian writer Italo Calvino dead (19). Prime Minister Laurent Fabius admits, after defence minister Charles Hernu and secret service chief Pierre Lacoste resignd, that France sank the Rainbow Warrior (22). Soviet Prime Minister Nikolai Tikhonov, 80, replaced by politburo member Nikolai Ryzhkov, 55 (27). Four Soviet diplomats kidnapped in Beirut (30).

Israeli warplanes bomb the PLO headquarters in Tunis, killing nearly 100 people and wounding another 100. Spy novelist Helen Macinnes dead; Oleg Spirine, one of the four kidnapped Soviet diplomats found dead in Beirutt (October 1). Film star Rock Hudson dies of AIDS. (2). Two Beirut dailies publish a statement from the Islamic Jihad group saying that US diplomat Willam Buckley, kidnapped on March 16, 1984, had been killed in retaliation for the Israeli air raid on Tunis (4). Floods kill 200 in Puerto Rico (8).

Ship Hijacked. Four gunmen, who hijacked the Italian cruise liner Achille Lauro in the Mediterranean and killed crippled Jewish-American passenger Leon Klinghoffer, surrender to Egyptian authorities at Port Said (9). Stage and acreen star Yul Brynner dead (10). Egyptian airliner with the Achille Lauro hijackers on board is forced by US fighter planes to land at a NATO airbase in Sicily. The hijackers are arrested by Italian authorities while the plane and the other passengers, including PLO official Abu Abbas, whom the Americans accused of having masterminded the hijack, are released; Flim maker Orson Welles who triggered a panic-wave across America with his realistic radio production of H. G. Wells' War of the Worlds in 1938 dies in Los Angeles (11).

71 Dhaka University students are killed as the roof of a dormitory collapses (15). Ignoring worldwide appeals for clemency the South African government hangs black poet Benjamin Moloise, 28, for the murder of a policeman (18). 123 fortune hunters killed as a hillside which they had burrowed into looking for gold, in the Southern Philippines, caved in after rains (20).

The Commonwealth summit at Nassau in the Bahamas strains to reach an agreement recommending limited economic "measures" against South Africa; Vietnam appeals for international aid after Typhoon Cecil left up to 800 dead and thousands homeless (21). Jose Biro, inventor of the ball-point pen, dead; The Greenpeace protest flotilla fails to stop a French nuclear test at Mururoa Atoll in the South Pacific (24). Israeli Radio reports that Prime Minister Shimon Peres had a secret meeting with Sri Lankan President J R. Jayewardene in Paris (28). Three kidnapped Soviet diplomats released in Beirut (30).

Polish communist party chief Wojciech Jaruzelki takes over as Persident and nominates Deputy Prime Minister Zbigniew Messner to replace him as Prime Minister; Al Hassan Mwinyi succeeds Julius Nyerere a

Half the World is Poor

The World Bank says that nearly half of the world's people live in countries with a gross national product per capita of 400 dollars or less while only about a sixth live in countries with a GNP per capita of more than 5,500 dollars.

The World Bank Atlas 1986 says more than a quarter of the world's people live in countries where the GNP per capita during 1973-83 rose more than 4 percent a year.

This average annual growth rate was fast enough for the production of goods and services per person to rise by almost two-thirds during the decade.

While there has been some growth in the GNP per capita of most other developing countries more than 300 million people, mostly in Africa, live in countries where the per capita income has plunged in the decade.

More than 400 million people live in countries where the average life expectancy at birth is less than 50 years. In these countries, the average GNP per capita is 320 dollars.

In both rich and poor countries, the proportion of infants who die in their first year has dropped by half since 1960. Still, more than a sixth of the world's people live in countries where one infant in 10 does not reach its first birthday.

In the developing countries, almost 500 million children are enrolled in primary school up from about 240 million in 1960.

The average primary school enrolement ratio for developing countries has risen to about 96 per cent. But in most developing countries, girls are still less likely than boys to attend school.

Debt Nations Pay Back More

International banks have taken more money out of heavily-indebted countries than they have been putting in, despite a U.s. aid plan backed by the International Monetary Fund (IMF).

The Bank for International Settlements (BIS) said in October 1986 that in the past two-and-a-half years banks were forced under rescheduling agreements to provide $ 15 billion of new loans to several of 18 Latin American, African and east European countries considered "problem" debtors.

But even taking that into account, banks reduced overall lending to these countries by $ 2.3 billion over that period and withdrew $ 14 billion during the first six months of 1986 alone.

"There continued to be no signs of any return to spontaneous bank lending to problem-debtor countries," said the BIS, which acts as central banker to the world's central banks.

Commercial banks had $ 309.3 billion in loans outstanding to the 18 problem-countries at the end of June.

Since the end of 1983, international banks provided non-OPEC developing countries without debt problems – mainly in Asia – with $ 8.4 billion of new loans, for a total $ 127.5 billion.

Eastern European countries, excluding the problem cases of Poland and Romania, got an additional $ 11.1 billion, bringing their total to $ 53.6 billion, while non-problem developed countries like Australia, Greece and New Zealand, whose banks are not included in the survey, got an additional $ 16.7 billion, for a total of $ 81.2 billion.

Countries which the members of the Organisation of Petroleum Exporting Countries but face to acute financial problems got $ 1.1 billion less credit over the two-and-a-half years, reducing loans outstanding to $ 71.8 billion. But OPEC countries as a whole remained net creditors to the world's banks.

The report named the 18 problem countries as Argentina, Brazil, Chile, Cuba, Ecuador, the Ivory Coast, Mexico, Morocco, Nigeria, Peru, the Philipines, Poland, Romania, South Africa, the Sudan, Uruguay, Venezuela and Yugoslavia.

President of Tanzania; Anital Cavaco Silva sworn in Prime Minister of Portugal (November 6). 60 Persons including the Chief Justice and five other judges, are killed as Colombian troops storm the Palace of Justice in Bogota to free it from leftist guerillas who had seized it and held those inside hostage (7).

Kasparov Champ. Garri Kasparov beats fellow Soviet Player Anatoly Karpov 13-11 to become the youngest-ever world chess champion (9). The Nevado del Ruiz volcano in Colombia erupts, killing 25,000 people (14). Britian signs an agreement with Ireland, which for the first time gives Dublin a say in the affairs of Northern Ireland (15). Lon Nol, who was Prime Minister of Cambodia when it fell to communist rebels, dies in California (17). US President Ronald Reagan and Soviet leader Mikhail Gorbachev meet in Geneva the first superpower summit in six years (19).

It is reported at the international astronomy conference in New Delhi that the French spacecraft Giotto had relayed pictures of the Earth from a distance of 21 million km — the farthest yet — and that the Soviet craft Vega had taped the sounds of a violent storm on Venus; Papua New Guinea Prime Minister Michael Somare loses noconfidence motion and is replaced by Paias Wingti (21).

French secret service agents Dominique Prieur and Alain Mahfart sentenced to 10 years in a New Zealand prison for the sinking of the Rainbow Warrior; Ayatollah Hossein Ali Montazeri to succeed Ayatollah Ruhollah Khomeini in Iran (22).

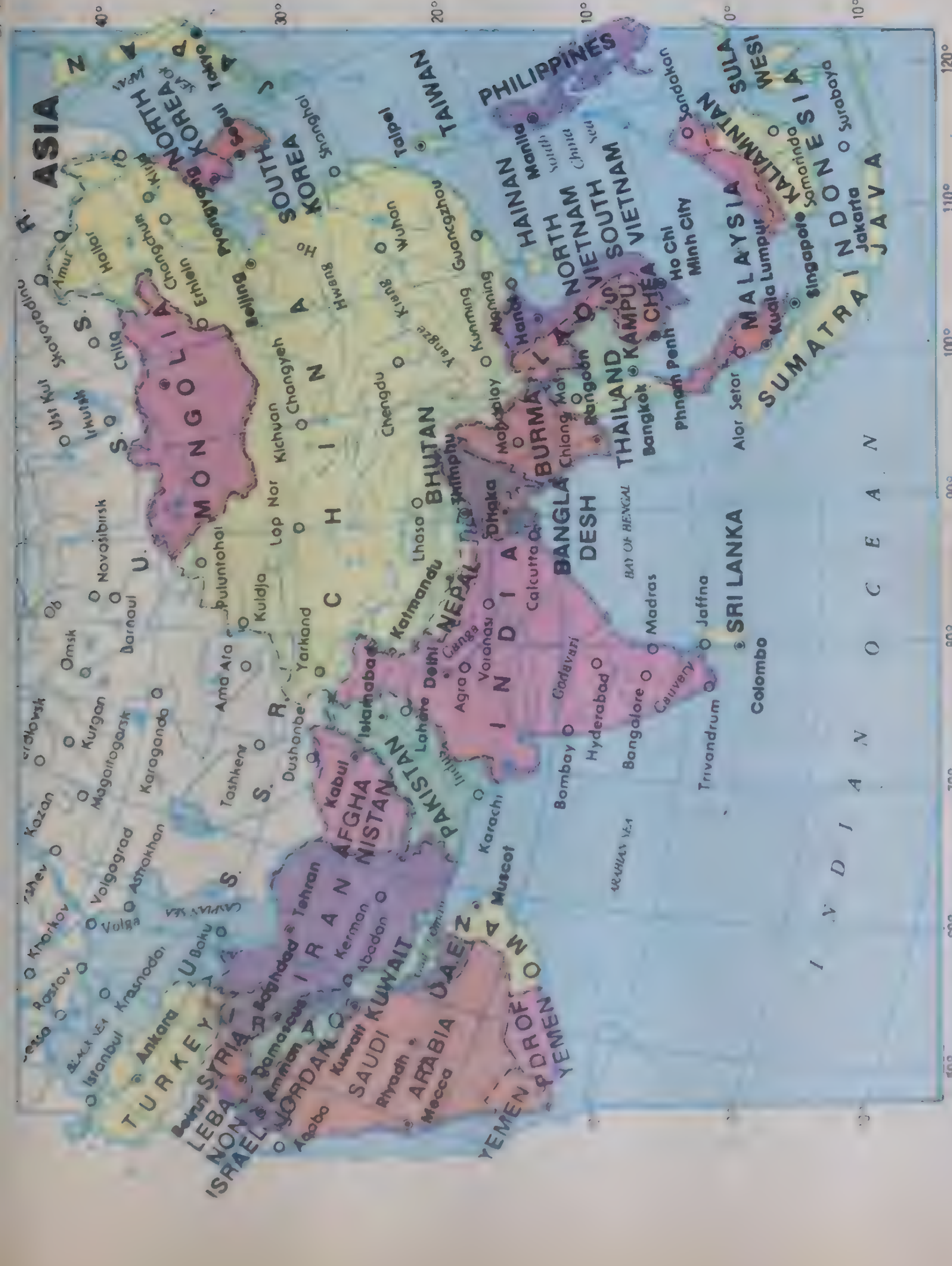
60 Persons killed as Egyptian commandos storm an Egypt air plane, hijacked while on a flight from Athens to Cairo and forced to land in Valletta, the capital of Malta. It was the
same plane which, while carrying the Achille
Lauro hijackers, had been forced down i
Sicily by US fighters (25).

Poet and critic Geoffrey Grigson dea
(December 1). Poet Philip Larkin dead (2)
Assassinated Philippines opposition leade
Beningno Aquino's wife Corazon to run fo
President (3). The Guinness Book of Record
enters its own name as the biggest sellin
copyright book (6). Poet Robert Graves dea
(8). Vinicio Cerezo elected President o
Guatemala; Former Argentinian Presiden
Joge Videla sentenced to death (9).

Physicians For Peace. Dr
Yevgeny Chazov and Dr. Bernard Low
founders of International Physicians for th
Prevention of Nuclear War, the organisatio
'which won the year's Nobel peace prize
together save the life of a reporter wh
suffered a heart attack at a news conferenc
on the eve of the award ceremony in Osl
The US ambassador keeps off but the Sovie
ambassador attends the ceremony for th
first time in 10 years. Protestors brave th
cold to demonstrate against giving the awar
to a Soviet official (10). Charted airline
carrying 250 US military personnel from th
Sinai peacekeeping force and a crew of
crashes in Gander, Canada, killing everyon
on board. In Beirut an anonymous caller tel
a western news agency that the Islamic Jiha
planted a bomb on the plane; New Zealan
claims 11 million dollars from France for th
sinking of the Rainbow Warrior (12).

Jailed South African leader Nelson Mande
la's wife Winnie released in Johannesbur
after being arrested and held over night (23
Cartoonist Joseph D. Oriolo, who create
"Caspar the friendly ghost", dead (25). Ma
shal law lifted in Pakistan (30). ☐

COUNTRIES AND CONTINENTS


ASIA
U. S. S. R.
MONGOLIA
CHINA
NORTH KOREA
SOUTH KOREA
JAPAN
TAIWAN
PHILIPPINES
HAINAN
NORTH VIETNAM
SOUTH VIETNAM
LAOS
KAMPUCHEA
THAILAND
BURMA
BANGLADESH
BHUTAN
NEPAL
INDIA
SRI LANKA
PAKISTAN
AFGHANISTAN
IRAN
IRAQ
KUWAIT
SAUDI ARABIA
U.A.E.
OMAN
P.D.R. OF YEMEN
YEMEN
JORDAN
SYRIA
LEBANON
ISRAEL
TURKEY
MALAYSIA
KALIMANTAN
SULAWESI
SUMATRA
JAVA
INDONESIA
INDIAN OCEAN
BAY OF BENGAL
ARABIAN SEA
South China Sea
Tokyo
Seoul
Pyongyang
Beijing
Shanghai
Taipei
Manila
Wuhan
Guangzhou
Chengdu
Kunming
Hanoi
Rangoon
Bangkok
Phnom Penh
Ho Chi Minh City
Kuala Lumpur
Singapore
Jakarta
Surabaya
Samarinda
Sandakan
Alor Setar
Dhaka
Thimphu
Lhasa
Katmandu
Delhi
Agra
Varanasi
Calcutta
Madras
Bombay
Hyderabad
Bangalore
Trivandrum
Jaffna
Colombo
Karachi
Lahore
Islamabad
Kabul
Tehran
Kerman
Abadan
Baghdad
Kuwait
Riyadh
Mecca
Muscat
Damascus
Amman
Beirut
Aqaba
Ankara
Istanbul
Baku
Tashkent
Dushanbe
Alma Ata
Novosibirsk
Omsk
Irkutsk
Chita
Kazan
Volgograd
Astrakhan
Kharkov
Rostov
Krasnodar
Karaganda
Barnaul
Kurgan
Kuldja
Yarkand
Lop Nor
Changyeh
Kichvan
Hailar
Mandalay
Chiang Mai
Ganga
Godavari
Cauvery
Yangtze
Hwang Ho
Amur
Ob
Volga
BLACK SEA
CASPIAN SEA
40°
30°
20°
10°
0°
10°
50°
60°
70°
80°
90°
100°
110°
120°
Statute Miles
0 200 400 600 800 1000
Kilometres
0 400 800 1200 1600

Maps and Agencies, Madras

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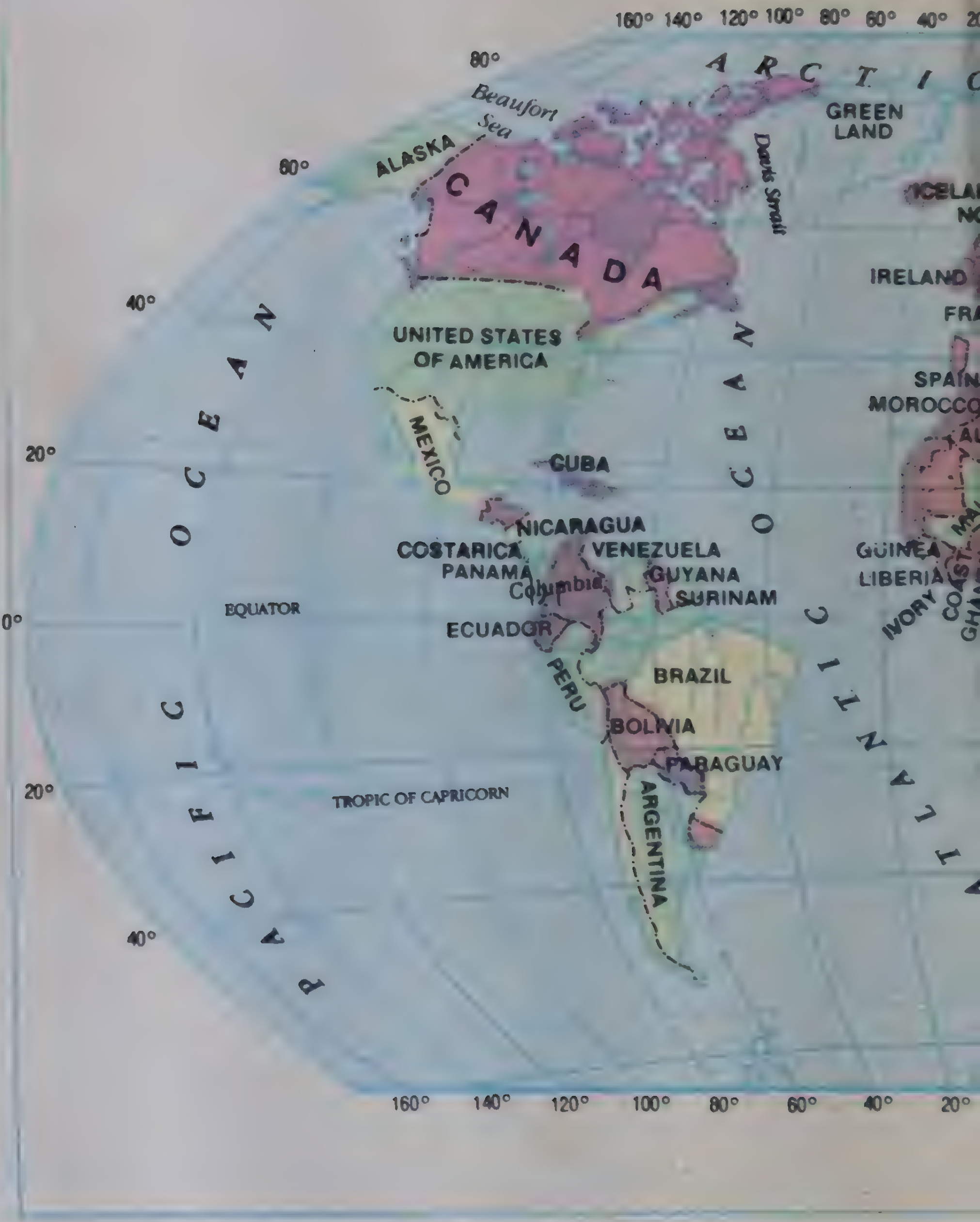
The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

THE WOR


160° 140° 120° 100° 80° 60° 40° 20
80°
60°
40°
20°
0°
20°
40°
ARCTIC
Beaufort Sea
ALASKA
CANADA
GREEN LAND
Davis Strait
ICELA
NO
IRELAND
FRA
SPAIN
MOROCCO
AL
UNITED STATES OF AMERICA
MEXICO
CUBA
NICARAGUA
COSTARICA
PANAMA
VENEZUELA
GUYANA
SURINAM
Columbia
ECUADOR
PERU
BRAZIL
BOLIVIA
PARAGUAY
ARGENTINA
GUINEA
LIBERIA
IVORY COAST
GHA
PACIFIC OCEAN
ATLANTIC OCEAN
EQUATOR
TROPIC OF CAPRICORN
160° 140° 120° 100° 80° 60° 40° 20°

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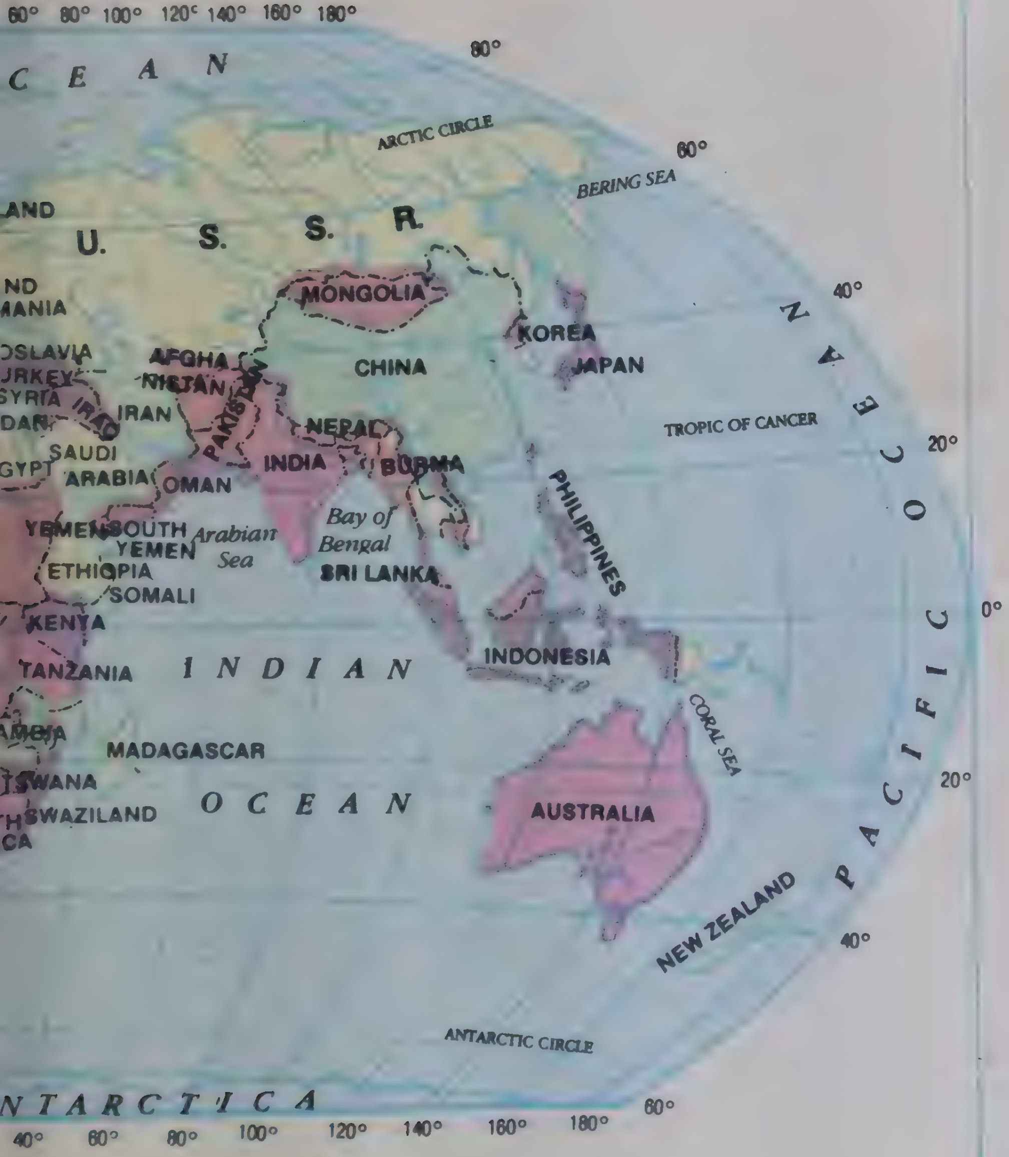
60° 80° 100° 120° 140° 160° 180°
C E A N
80°
ARCTIC CIRCLE
60°
BERING SEA
AND
U. S. S. R.
ND
MANIA
MONGOLIA
40°
KOREA
OSLAVIA
AFGHA-NISTAN
CHINA
JAPAN
URKEY
SYRIA
IRAQ
IRAN
PAKISTAN
DAN
NEPAL
TROPIC OF CANCER
SAUDI ARABIA
GYPT
OMAN
INDIA
BURMA
20°
PHILIPPINES
YEMEN
SOUTH YEMEN
Arabian Sea
Bay of Bengal
SRI LANKA
ETHIOPIA
SOMALI
0°
KENYA
INDONESIA
TANZANIA
I N D I A N
CORAL SEA
AMBIA
MADAGASCAR
20°
SWANA
SWAZILAND
O C E A N
AUSTRALIA
TH
CA
P A C I F I C O C E A N
NEW ZEALAND
40°
ANTARCTIC CIRCLE
NTARCTICA
60°
40° 60° 80° 100° 120° 140° 160° 180°

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Maps and Agencies, Madras,

dia extend into the
nautical miles
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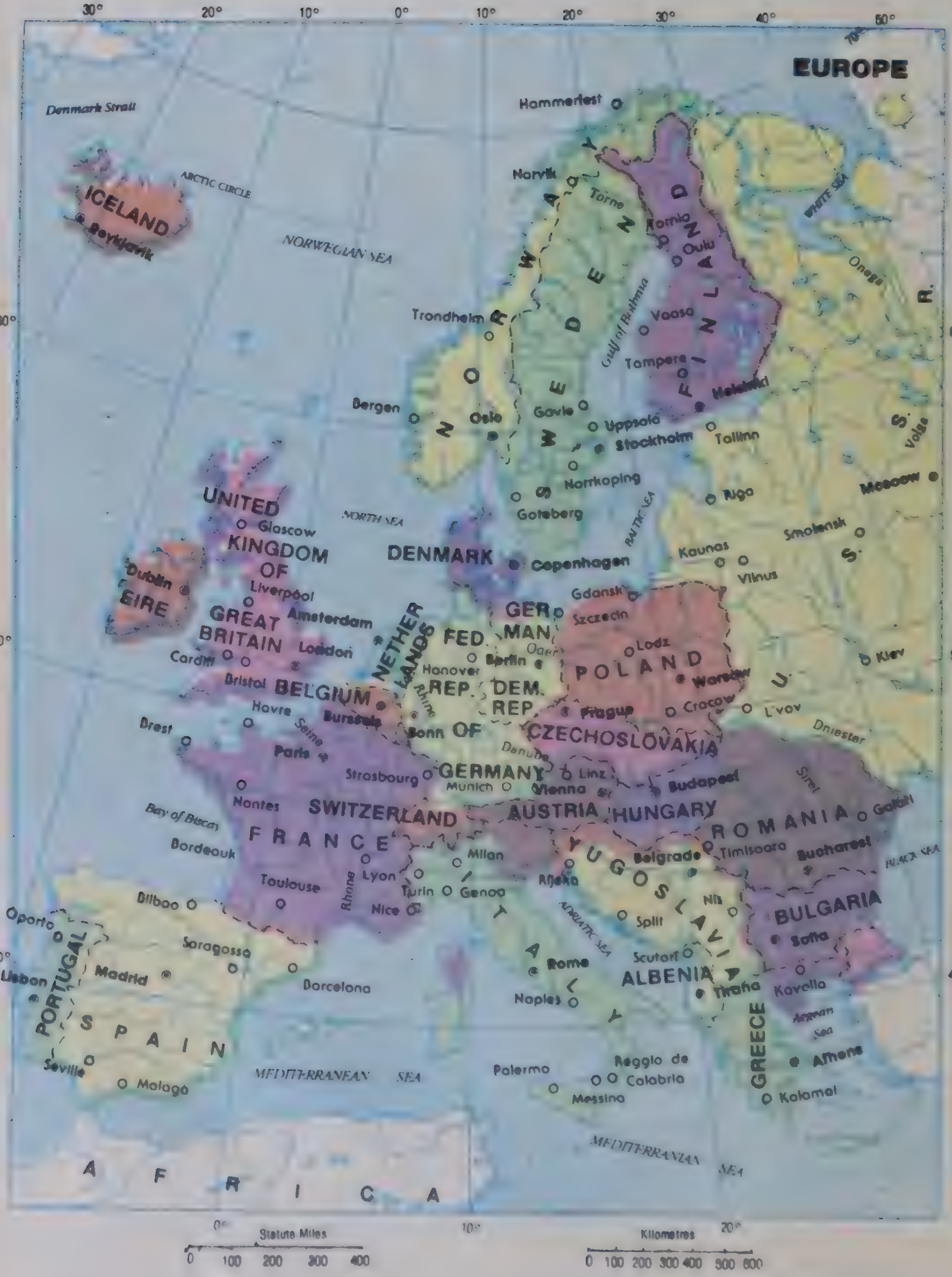
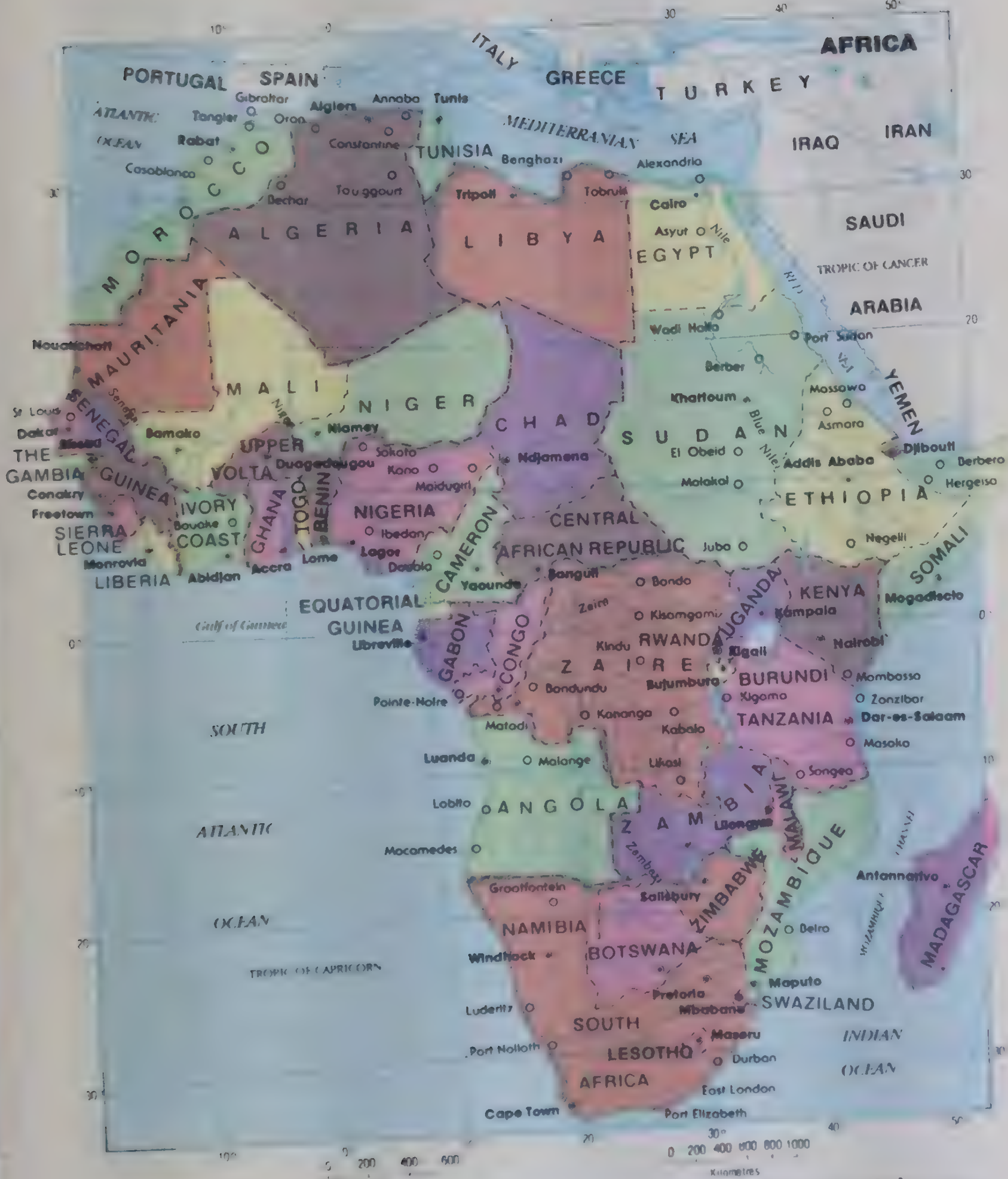

EUROPE
30° 20° 10° 0° 10° 20° 30° 40° 50° 70°
60° 50° 40°
Denmark Strait
ARCTIC CIRCLE
ICELAND
Reykjavik
NORWEGIAN SEA
NORWAY
SWEDEN
FINLAND
Hammerfest
Narvik
Torne
Tornio
Oulu
Vaasa
Gulf of Bothnia
Tampere
Helsinki
Trondheim
Bergen
Oslo
Gavle
Uppsala
Stockholm
Tallinn
Norrkoping
Goteborg
BALTIC SEA
Riga
WHITE SEA
Onega
Volga
Moscow
Smolensk
U. S. S. R.
Kaunas
Vilnius
NORTH SEA
DENMARK
Copenhagen
UNITED KINGDOM OF GREAT BRITAIN
Glascow
Liverpool
Cardiff
Bristol
London
EIRE
Dublin
NETHERLANDS
Amsterdam
BELGIUM
Brussels
Gdansk
Szczecin
GERMAN DEM. REP.
Berlin
Oder
FED. REP. OF GERMANY
Hanover
Rhine
Bonn
POLAND
Lodz
Warsaw
Cracow
L'vov
Kiev
Dniester
Prague
CZECHOSLOVAKIA
Danube
Linz
Vienna
Budapest
Siret
Havre
Seine
Brest
Paris
Strasbourg
Munich
Nantes
Bay of Biscay
SWITZERLAND
AUSTRIA
HUNGARY
ROMANIA
Galati
Bordeaux
FRANCE
Milan
Timisoara
Bucharest
BLACK SEA
Belgrade
Lyon
Rhone
Toulouse
Turin
Genoa
Rijeka
YUGOSLAVIA
Nis
Nice
Bilbao
ADRIATIC SEA
Split
BULGARIA
Sofia
Oporto
PORTUGAL
Saragossa
Madrid
Barcelona
ITALY
Rome
Scutari
ALBENIA
Tirana
Kavalla
Lisbon
SPAIN
Naples
GREECE
Aegean Sea
Athens
Seville
Malaga
MEDITERRANEAN SEA
Palermo
Reggio de Calabria
Messina
Kalamai
MEDITERRANEAN SEA
AFRICA
0° 10° 20°
Statute Miles
0 100 200 300 400
Kilometres
0 100 200 300 400 500 600

Maps and Agencies, Madras, 1986


AFRICA
PORTUGAL
SPAIN
ITALY
GREECE
TURKEY
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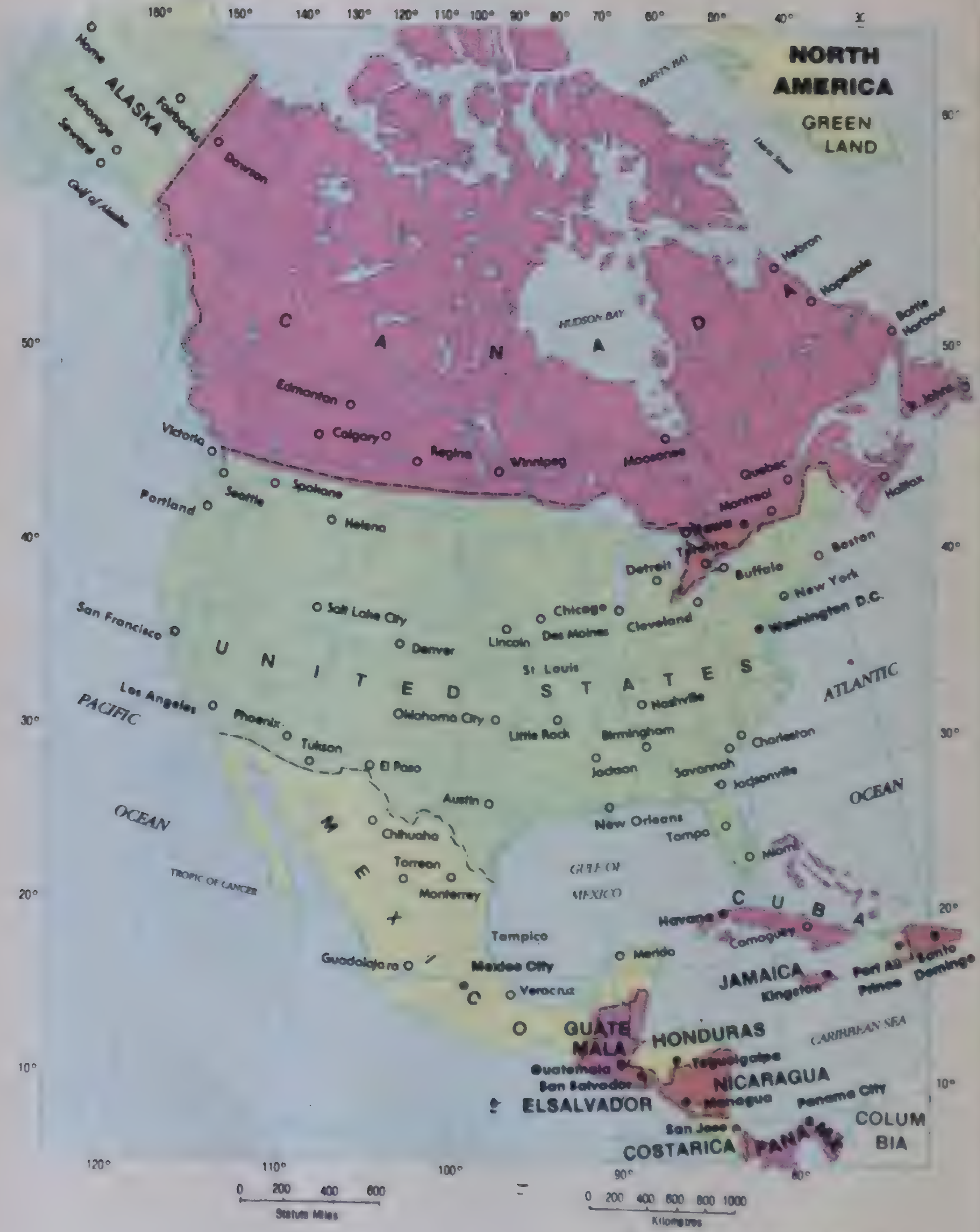
IRAN
SAUDI
ARABIA
TROPIC OF CANCER
YEMEN
ATLANTIC OCEAN
MEDITERRANEAN SEA
Gibraltar
Tangier
Oran
Algiers
Annaba
Tunis
Rabat
Casablanca
Constantine
TUNISIA
Benghazi
Alexandria
Touggourt
Bechar
Tripoli
Tobruk
Cairo
MOROCCO
ALGERIA
LIBYA
Asyut
Nile
EGYPT
Red Sea
Wadi Halfa
Port Sudan
Berber
Khartoum
Mossawa
Asmara
MAURITANIA
Nouakchott
MALI
NIGER
CHAD
SUDAN
Senegal
Niger
St Louis
Dakar
Bissau
SENEGAL
THE GAMBIA
Bamako
Niamey
UPPER VOLTA
Ouagadougou
Sokoto
Kano
Maidugiri
Ndjamena
El Obeid
Blue Nile
Addis Ababa
Djibouti
Berbera
Hergeisa
GUINEA
Conakry
Freetown
SIERRA LEONE
Monrovia
LIBERIA
IVORY COAST
Bouake
Abidjan
GHANA
Accra
TOGO
Lome
BENIN
NIGERIA
Ibadan
Lagos
Douala
CAMEROON
Yaounde
Malakal
Jubo
ETHIOPIA
Negelli
SOMALI
Mogadiscio
CENTRAL AFRICAN REPUBLIC
Bangui
Bondo
Kisangani
Zaire
UGANDA
Kampala
KENYA
Nairobi
Gulf of Guinea
EQUATORIAL GUINEA
Libreville
GABON
CONGO
Kindu
RWANDA
Kigali
ZAIRE
Bujumbura
BURUNDI
Kigoma
Mombasa
Zanzibar
Dar-es-Salaam
TANZANIA
Masoko
Pointe-Noire
Bandundu
Kananga
Kabalo
Matadi
Luanda
Malange
Likasi
Songea
Lobito
ANGOLA
ZAMBIA
Lilongwe
MALAWI
MOZAMBIQUE
Mocamedes
Zambezi
Mozambique Channel
Antananarivo
MADAGASCAR
SOUTH ATLANTIC OCEAN
Grootfontein
Salisbury
ZIMBABWE
NAMIBIA
Beira
Windhoek
BOTSWANA
TROPIC OF CAPRICORN
Pretoria
Mbabane
Maputo
SWAZILAND
Luderitz
SOUTH AFRICA
Maseru
LESOTHO
Port Nolloth
Durban
INDIAN OCEAN
East London
Cape Town
Port Elizabeth
10°
0°
10
20
30
40
50
0 200 400 600
Statute Miles
0 200 400 600 800 1000
Kilometres

Maps and Agencies, Madras, 1986


NORTH AMERICA
GREEN LAND
BAFFIN BAY
Davis Strait
ALASKA
Nome
Fairbanks
Anchorage
Seward
Gulf of Alaska
Dawson
C A N A D A
HUDSON BAY
Hebron
Hopedale
Battle Harbour
St. Johns
Edmonton
Calgary
Regina
Winnipeg
Moosonee
Quebec
Montreal
Halifax
Ottawa
Toronto
Victoria
Seattle
Spokane
Portland
Helena
Detroit
Buffalo
Boston
New York
Washington D.C.
Chicago
Cleveland
Salt Lake City
San Francisco
Denver
Lincoln
Des Moines
St Louis
U N I T E D S T A T E S
Nashville
Los Angeles
Phoenix
Tukson
Oklahoma City
Little Rock
Birmingham
Charleston
Jackson
Savannah
Jacksonville
El Paso
Austin
New Orleans
Tampa
Miami
PACIFIC OCEAN
ATLANTIC OCEAN
TROPIC OF CANCER
M E X I C O
Chihuaha
Torreon
Monterrey
GULF OF MEXICO
Tampico
Guadalajara
Mexico City
Veracruz
Merida
C U B A
Havana
Camaguey
JAMAICA
Kingston
Port Au Prince
Santo Domingo
CARIBBEAN SEA
GUATEMALA
Guatemala
HONDURAS
Tegucigalpa
San Salvador
ELSALVADOR
NICARAGUA
Managua
San Jose
COSTARICA
PANAMA
Panama City
COLUMBIA
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30
60°
50°
40°
30°
20°
10°
120°
110°
100°
90°
80°
0 200 400 600
Statute Miles
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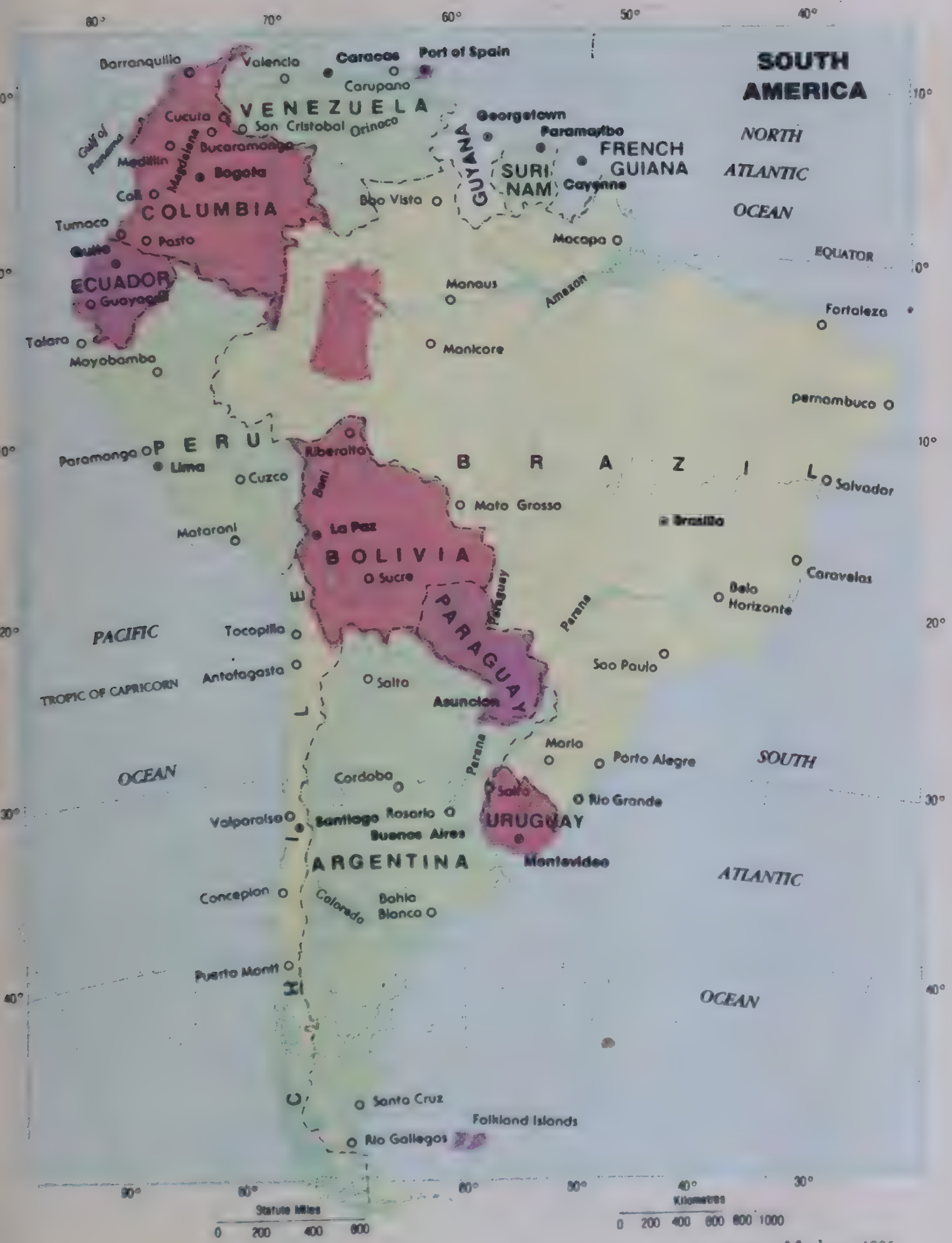
Kilometres

Maps and Agencies, Madras, '86


SOUTH AMERICA
NORTH ATLANTIC OCEAN
EQUATOR
PACIFIC
TROPIC OF CAPRICORN
OCEAN
SOUTH ATLANTIC OCEAN
VENEZUELA
COLUMBIA
ECUADOR
GUYANA
SURINAM
FRENCH GUIANA
PERU
BRAZIL
BOLIVIA
PARAGUAY
URUGUAY
ARGENTINA
CHILE
Barranquilla
Valencia
Caracas
Port of Spain
Carupano
Cucuta
San Cristobal
Orinoco
Gulf of Panama
Bucaramanga
Medillin
Magdalena
Bogota
Cali
Tumaco
Pasto
Quito
Guayaquil
Talara
Moyobamba
Georgetown
Paramaribo
Cayenne
Boa Vista
Macapa
Manaus
Amazon
Manicore
Fortaleza
Pernambuco
Paramonga
Lima
Cuzco
Riberalta
Beni
Mato Grosso
Brasilia
Salvador
Matarani
La Paz
Sucre
Caravelas
Belo Horizonte
Parana
Paraguay
Tocopilla
Antofagasta
Salta
Asuncion
Sao Paulo
Maria
Porto Alegre
Cordoba
Salto
Rio Grande
Valparaiso
Santiago
Rosario
Buenos Aires
Montevideo
Concepion
Colorado
Bahia Blanca
Puerto Montt
Santa Cruz
Falkland Islands
Rio Gallegos
80°
70°
60°
50°
40°
30°
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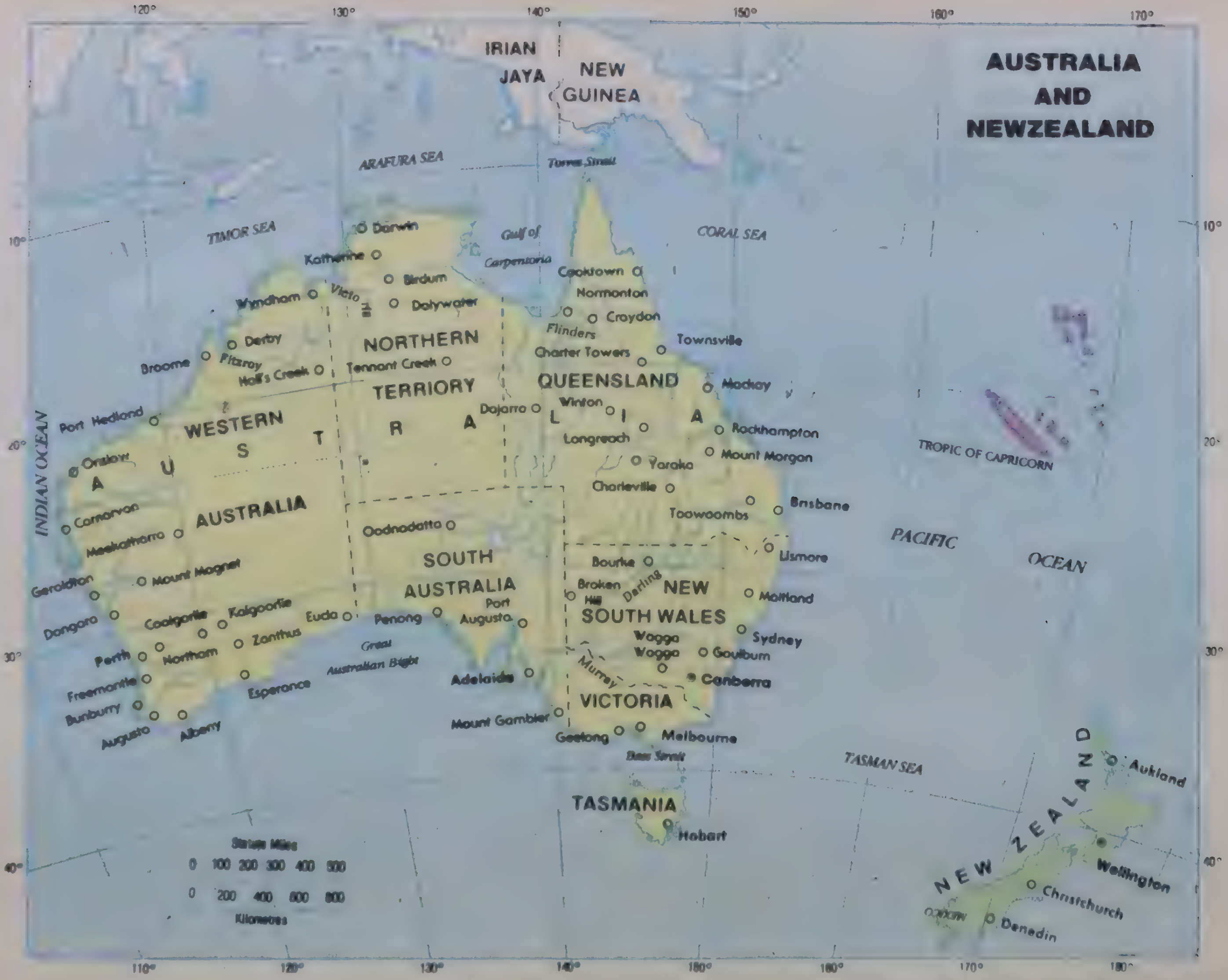
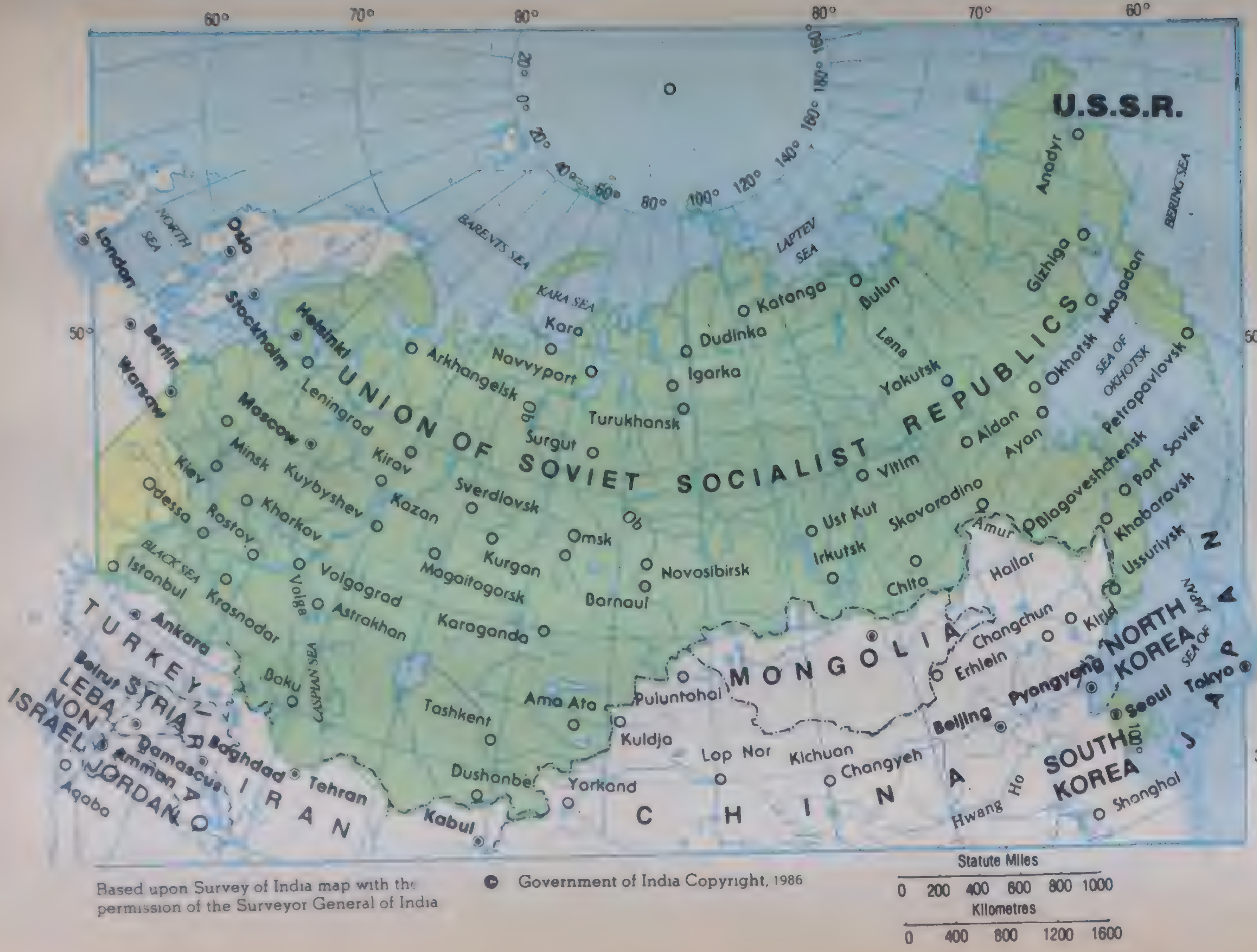
0°
20°
Statute Miles
0 200 400 600
Kilometres
0 200 400 600 800 1000

Maps and Agencies, Madras, 1986


AUSTRALIA
AND
NEWZEALAND
IRIAN
JAYA
NEW
GUINEA
ARAFURA SEA
Torres Strait
TIMOR SEA
Gulf of
Carpentaria
CORAL SEA
INDIAN OCEAN
PACIFIC
OCEAN
TROPIC OF CAPRICORN
TASMAN SEA
Great
Australian Bight
Bass Strait
WESTERN
AUSTRALIA
NORTHERN
TERRIORY
QUEENSLAND
SOUTH
AUSTRALIA
NEW
SOUTH WALES
VICTORIA
TASMANIA
NEW ZEALAND
A U S T R A L I A
Darwin
Katherine
Birdum
Daly Waters
Victoria
Wyndham
Derby
Fitzroy
Broome
Halls Creek
Tennant Creek
Port Hedland
Onslow
Carnarvon
Meekatharra
Mount Magnet
Geraldton
Dongara
Coolgardie
Kalgoorlie
Eucla
Perth
Northam
Zanthus
Freemantle
Bunbury
Augusta
Albany
Esperance
Penong
Port
Augusta
Adelaide
Mount Gambler
Oodnadatta
Dajarra
Cooktown
Normanton
Croydon
Flinders
Townsville
Charter Towers
Mackay
Winton
Longreach
Rockhampton
Mount Morgan
Yaraka
Charleville
Toowoomba
Brisbane
Lismore
Bourke
Broken
Hill
Darling
Maitland
Sydney
Wagga
Wagga
Goulburn
Canberra
Murray
Geelong
Melbourne
Hobart
Aukland
Wellington
Christchurch
Denedin
Statute Miles
0 100 200 300 400 500
0 200 400 600 800
Kilometres
10°
20°
30°
40°
110°
120°
130°
140°
150°
160°
170°
180°

Maps and Agencies, Madras, 1986


U.S.S.R.
UNION OF SOVIET SOCIALIST REPUBLICS
BERING SEA
LAPTEV SEA
KARA SEA
BARENTS SEA
NORTH SEA
BLACK SEA
CASPIAN SEA
SEA OF OKHOTSK
SEA OF JAPAN
60°
70°
80°
50°
30°
20°
0°
40°
60°
80°
100°
120°
140°
160°
180°
160°
London
Oslo
Stockholm
Helsinki
Berlin
Warsaw
Leningrad
Moscow
Minsk
Kiev
Odessa
Rostov
Kharkov
Kuybyshev
Kirov
Kazan
Arkhangelsk
Navvyport
Kara
Ob
Surgut
Turukhansk
Igarka
Dudinka
Katanga
Bulun
Lena
Yakutsk
Gizhiga
Anadyr
Magadan
Okhotsk
Petropavlovsk
Aldan
Ayan
Vitim
Ust Kut
Irkutsk
Skovorodino
Chita
Amur
Blagoveshchensk
Port Soviet
Khabarovsk
Ussuriysk
Sverdlovsk
Omsk
Ob
Novosibirsk
Barnaul
Kurgan
Magaitogorsk
Karaganda
Volgograd
Volga
Astrakhan
Krasnodar
Istanbul
Ankara
Baku
Tashkent
Ama Ata
Dushanbe
Kabul
Tehran
Baghdad
Damascus
Amman
Beirut
Aqaba
TURKEY
SYRIA
LEBANON
ISRAEL
JORDAN
IRAN
MONGOLIA
Puluntohai
Kuldja
Yarkand
Lop Nor
Kichuan
Changyeh
Hallar
Changchun
Erhlein
Kirin
Beijing
Pyongyang
NORTH KOREA
SOUTH KOREA
Seoul
Tokyo
JAPAN
Shanghai
Hwang Ho
CHINA
Statute Miles
0 200 400 600 800 1000
Kilometres
0 400 800 1200 1600

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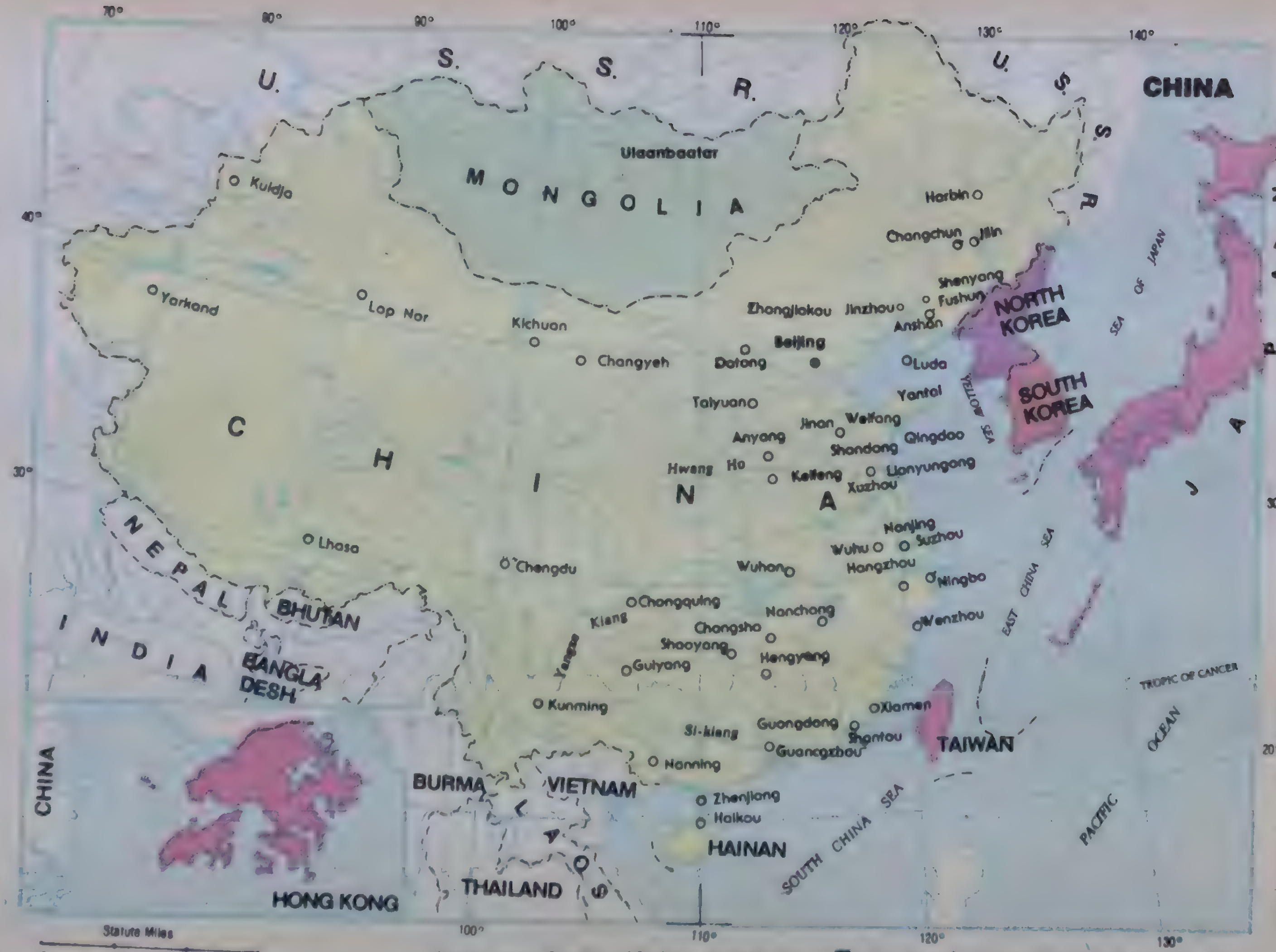
U. S. S. R.
CHINA
JAPAN
MONGOLIA
Ulaanbaatar
CHINA
Kuldja
Yarkand
Lop Nor
Kichuan
Changyeh
Datong
Beijing
Zhangjiakou
Jinzhou
Harbin
Changchun
Jilin
Shenyang
Fushun
Anshan
Luda
Yantai
Taiyuan
Jinan
Weifang
Qingdao
Anyang
Shandong
Hwang Ho
Kaifeng
Lianyungang
Xuzhou
Nanjing
Wuhu
Suzhou
Hangzhou
Ningbo
Wuhan
Lhasa
Chengdu
Chongquing
Kiang
Yangtze
Nanchang
Changsha
Shaoyang
Hengyang
Guiyang
Wenzhou
Kunming
Si-kiang
Guangdong
Xiamen
Shantou
Guancgzhou
Nanning
Zhenjiang
Haikou
HAINAN
TAIWAN
NORTH KOREA
SOUTH KOREA
YELLOW SEA
SEA OF JAPAN
EAST CHINA SEA
SOUTH CHINA SEA
PACIFIC OCEAN
TROPIC OF CANCER
NEPAL
BHUTAN
INDIA
BANGLA DESH
BURMA
VIETNAM
LAOS
THAILAND
HONG KONG
70°
80°
90°
100°
110°
120°
130°
140°
40°
30°
20°
Statute Miles
0
200
400
600
Kilometres
0
200
400
600
800

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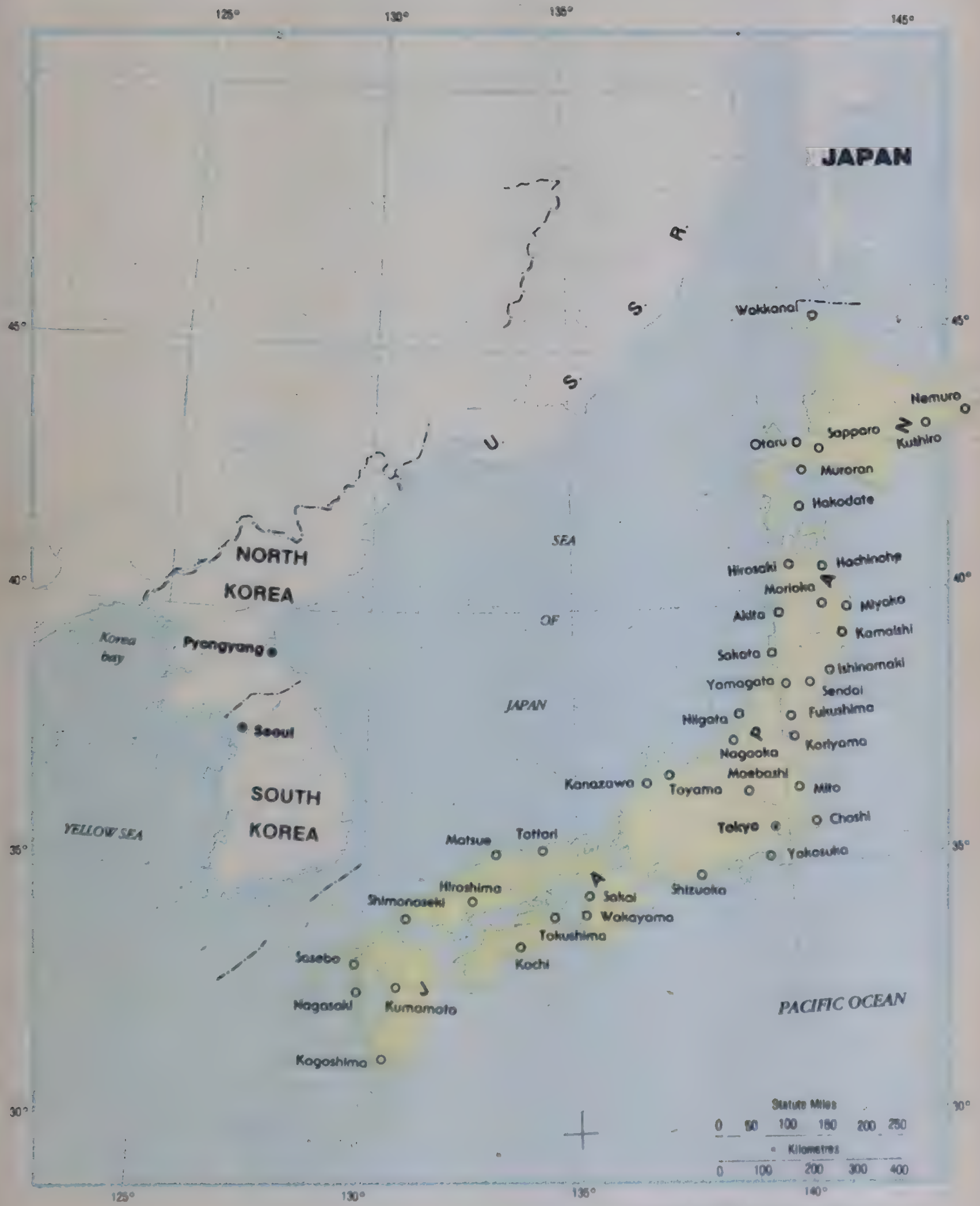
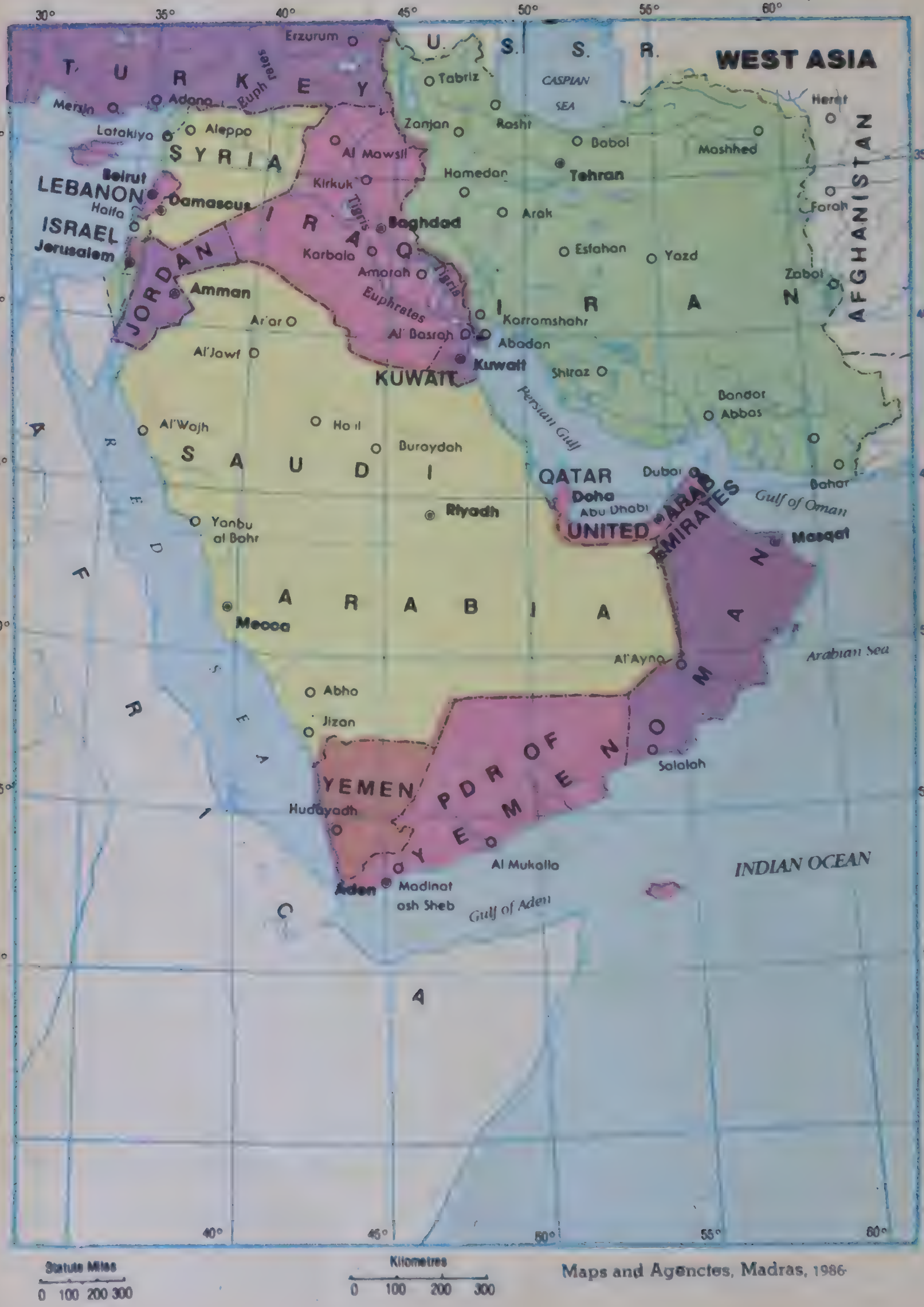
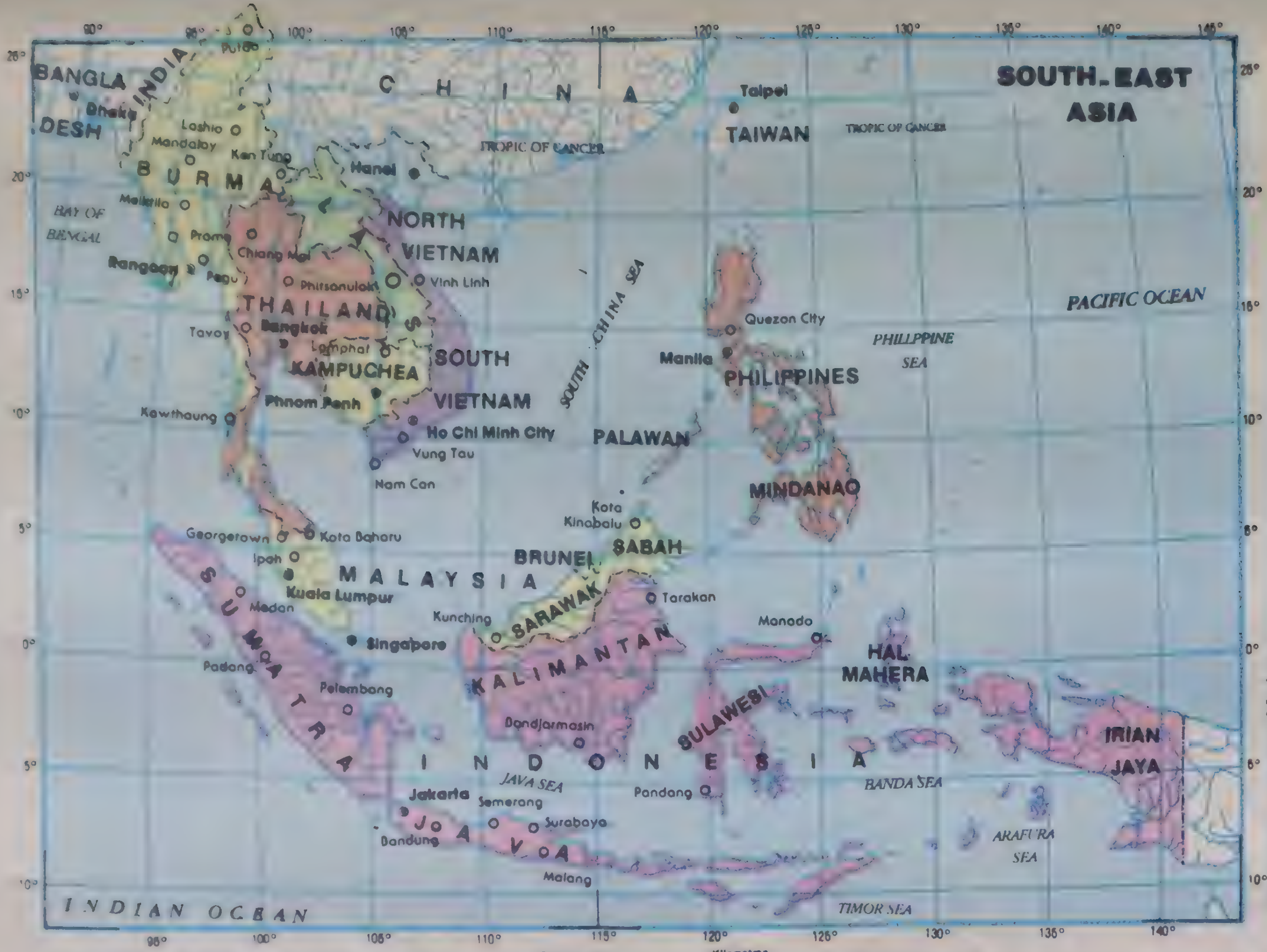
The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.


JAPAN
125°
130°
135°
145°
U. S. S. R.
Wakkanai
Nemuro
Otaru
Sapporo
Kushiro
Muroran
Hakodate
SEA
OF
JAPAN
NORTH
KOREA
Korea bay
Pyongyang
Seoul
SOUTH
KOREA
YELLOW SEA
Hirosaki
Hachinohe
Morioka
Akita
Miyako
Kamaishi
Sakata
Ishinomaki
Yamagata
Sendai
Niigata
Fukushima
Nagaoka
Koriyama
Maebashi
Kanazawa
Toyama
Mito
Tokyo
Choshi
Yokosuka
Matsue
Tottori
Shizuoka
Hiroshima
Shimonoseki
Sakai
Wakayama
Tokushima
Kochi
Sasebo
Nagasaki
Kumamoto
Kagoshima
J A P A N
PACIFIC OCEAN
45°
40°
35°
30°
Statute Miles
0 50 100 150 200 250
Kilometres
0 100 200 300 400
140°

Maps and Agencies, Madras, 1986


WEST ASIA
U. S. S. R.
TURKEY
Erzurum
Euphrates
Mersin
Adana
Latakiya
Aleppo
SYRIA
LEBANON
Beirut
Damascus
Haifa
ISRAEL
Jerusalem
JORDAN
Amman
IRAQ
Al Mawsil
Kirkuk
Tigris
Baghdad
Karbala
Amarah
Euphrates
Tigris
Al Basrah
Ar'ar
Al'Jawf
KUWAIT
Kuwait
Tabriz
CASPIAN SEA
Rasht
Zanjan
Babol
Tehran
Hamedan
Arak
Esfahan
Yazd
Mashhed
Herat
Farah
Zabol
AFGHANISTAN
IRAN
Korromshahr
Abadan
Shiraz
Bandar Abbas
Bahar
Persian Gulf
Gulf of Oman
Dubai
QATAR
Doha
Abu Dhabi
UNITED ARAB EMIRATES
Masqat
OMAN
Al'Ayna
Salalah
Arabian Sea
Al'Wajh
Ha'il
Buraydah
SAUDI ARABIA
Riyadh
Yanbu al Bahr
Mecca
Abha
Jizan
RED SEA
AFRICA
YEMEN
Hudaydah
Aden
PDR OF YEMEN
Al Mukalla
Madinat osh Sheb
Gulf of Aden
INDIAN OCEAN
30°
35°
40°
45°
50°
55°
60°
Statute Miles
0 100 200 300
Kilometres
0 100 200 300

Maps and Agencies, Madras, 1986



SOUTH-EAST ASIA
C H I N A
INDIA
BANGLA DESH
Dhaka
Putao
Lashio
Mandalay
Ken Tung
B U R M A
Meiktila
Prome
Rangoon
Pegu
BAY OF BENGAL
Hanoi
TROPIC OF CANCER
NORTH VIETNAM
Vinh Linh
Chiang Mai
Phitsanulok
THAILAND
Tavoy
Bangkok
Lomphat
KAMPUCHEA
Phnom Penh
SOUTH VIETNAM
Ho Chi Minh City
Vung Tau
Nam Can
Kawthaung
SOUTH CHINA SEA
Taipei
TAIWAN
PACIFIC OCEAN
Quezon City
Manila
PHILIPPINES
PHILLPPINE SEA
PALAWAN
MINDANAO
Kota Kinabalu
SABAH
BRUNEI
Georgetown
Kota Baharu
Ipoh
M A L A Y S I A
Kuala Lumpur
Medan
Kunching
SARAWAK
Tarakan
Singapore
S U M A T R A
Padang
Palembang
KALIMANTAN
Bandjarmasin
Monodo
HAL MAHERA
SULAWESI
I N D O N E S I A
JAVA SEA
Jakarta
Semerang
Surabaya
Bandung
J A V A
Malang
Pandang
BANDA SEA
IRIAN JAYA
ARAFURA SEA
TIMOR SEA
INDIAN OCEAN
90°
95°
100°
105°
110°
115°
120°
125°
130°
135°
140°
145°
25°
20°
15°
10°
5°
0°
Statute Miles
0
200
400
Kilometres
0
200
400
600

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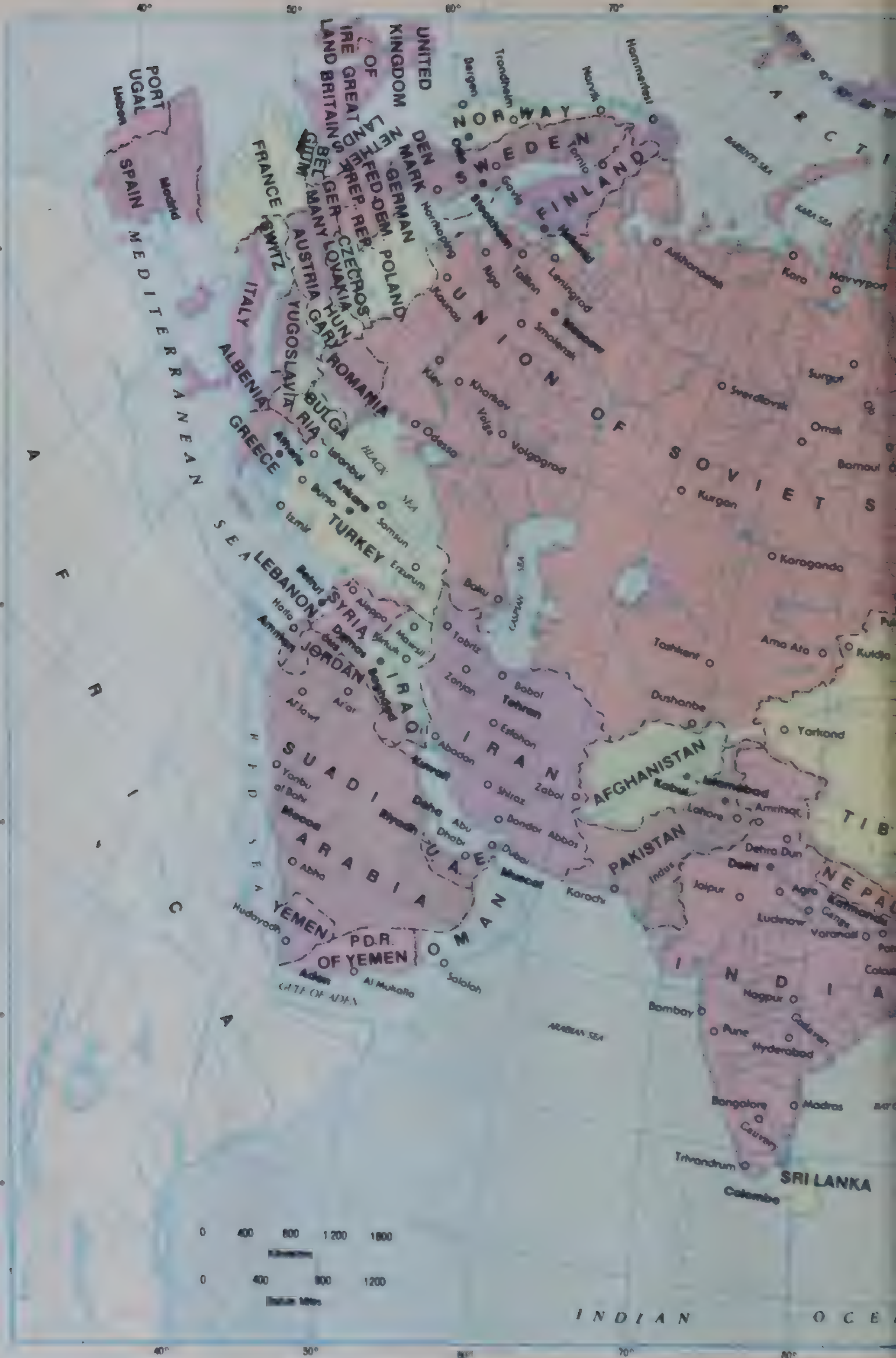
Maps and Agencies, Madras,


UNITED KINGDOM OF GREAT BRITAIN
IRELAND
PORTUGAL
Lisbon
SPAIN
Madrid
FRANCE
NETHERLANDS
BELGIUM
SWITZ
ITALY
DENMARK
GERMAN DEM. REP.
FED. REP. OF GERMANY
POLAND
CZECHOSLOVAKIA
AUSTRIA
HUNGARY
YUGOSLAVIA
ALBANIA
GREECE
Athens
ROMANIA
BULGARIA
Istanbul
Ankara
Bursa
Izmir
Samsun
Erzurum
TURKEY
BLACK SEA
NORWAY
Bergen
Oslo
Trondheim
Narvik
Nordkapp
Hammerfest
SWEDEN
Stockholm
Gavle
Tornio
FINLAND
Helsinki
Norrköping
Riga
Tallinn
Leningrad
Kaunas
Moscow
Smolensk
Kiev
Kharkov
Odessa
Volgograd
Volga
UNION OF SOVIET S
Arkhangelsk
BARENTS SEA
KARA SEA
ARCTI
Kara
Novyport
Surgut
Sverdlovsk
Omsk
Barnaul
Ob
Kurgan
Karaganda
Alma Ata
Kuldja
Tashkent
Dushanbe
Baku
CASPIAN SEA
Tabriz
Babol
Tehran
Zanjan
Esfahan
IRAN
Shiraz
Zabol
Abadan
Bandar Abbas
AFGHANISTAN
Kabul
Islamabad
Lahore
Amritsar
PAKISTAN
Indus
Karachi
Yarkand
TIB
NEPAL
Katmandu
Dehra Dun
Delhi
Jaipur
Agra
Ganga
Lucknow
Varanasi
Patna
Calcutta
INDIA
Nagpur
Bombay
Pune
Hyderabad
Godavari
Bangalore
Madras
Cauvery
Trivandrum
SRI LANKA
Colombo
ARABIAN SEA
LEBANON
Beirut
SYRIA
Aleppo
Damascus
Haifa
Amman
JORDAN
Mosul
Kirkuk
IRAQ
Baghdad
Ar'ar
Al Jawf
Kuwait
SAUDI ARABIA
Yanbu al Bahr
Mecca
Riyadh
Abha
Doha
Abu Dhabi
Dubai
U.A.E.
Muscat
OMAN
Salalah
YEMEN
Hudaydah
P.D.R. OF YEMEN
Aden
Al Mukalla
GULF OF ADEN
RED SEA
MEDITERRANEAN SEA
AFRICA
INDIAN OCE
0 400 800 1200 1600
Kilometres
0 400 800 1200
Statute Miles
40°
50°
60°
70°
80°
30°
20°
10°
0°
10°

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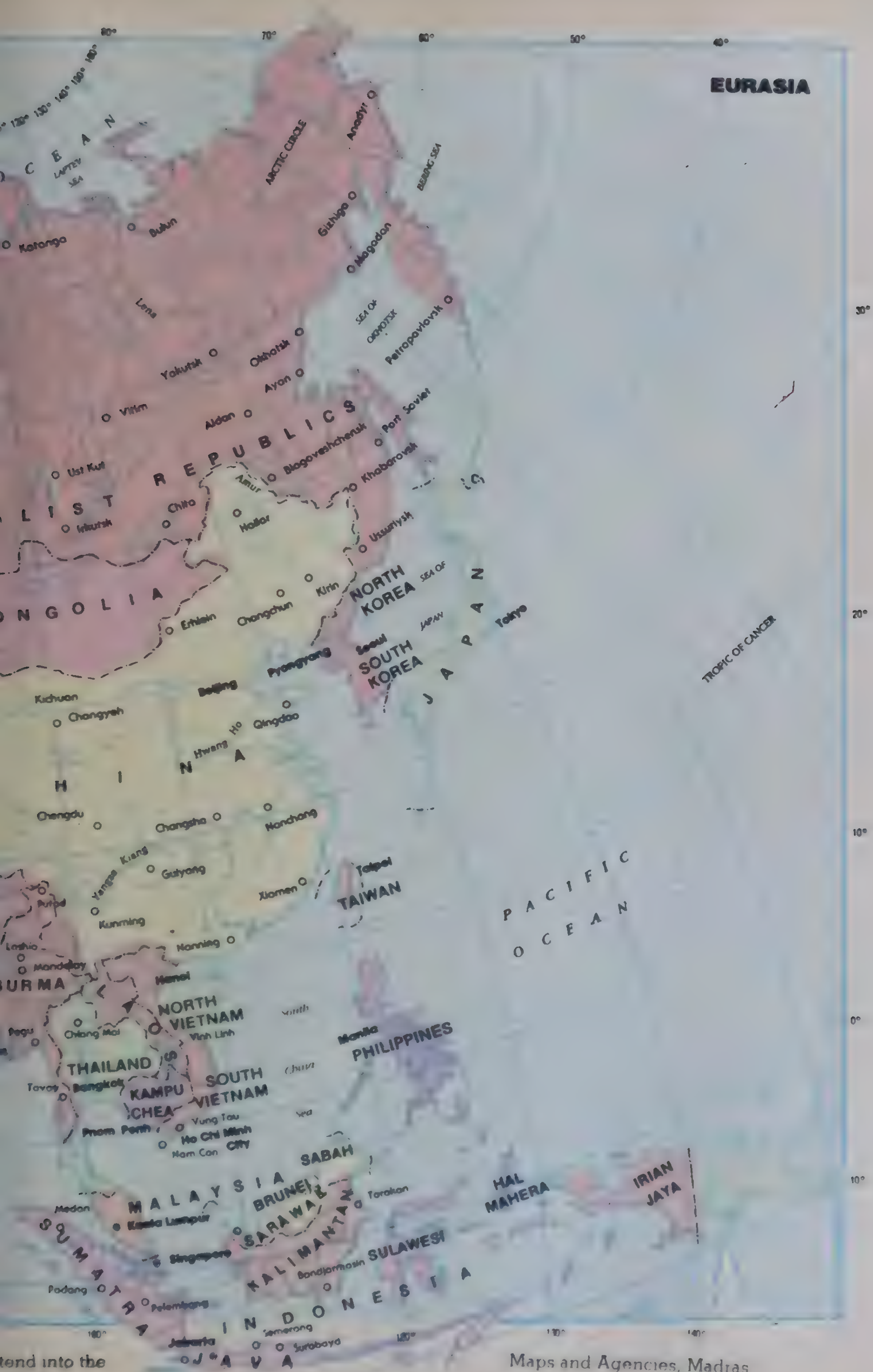
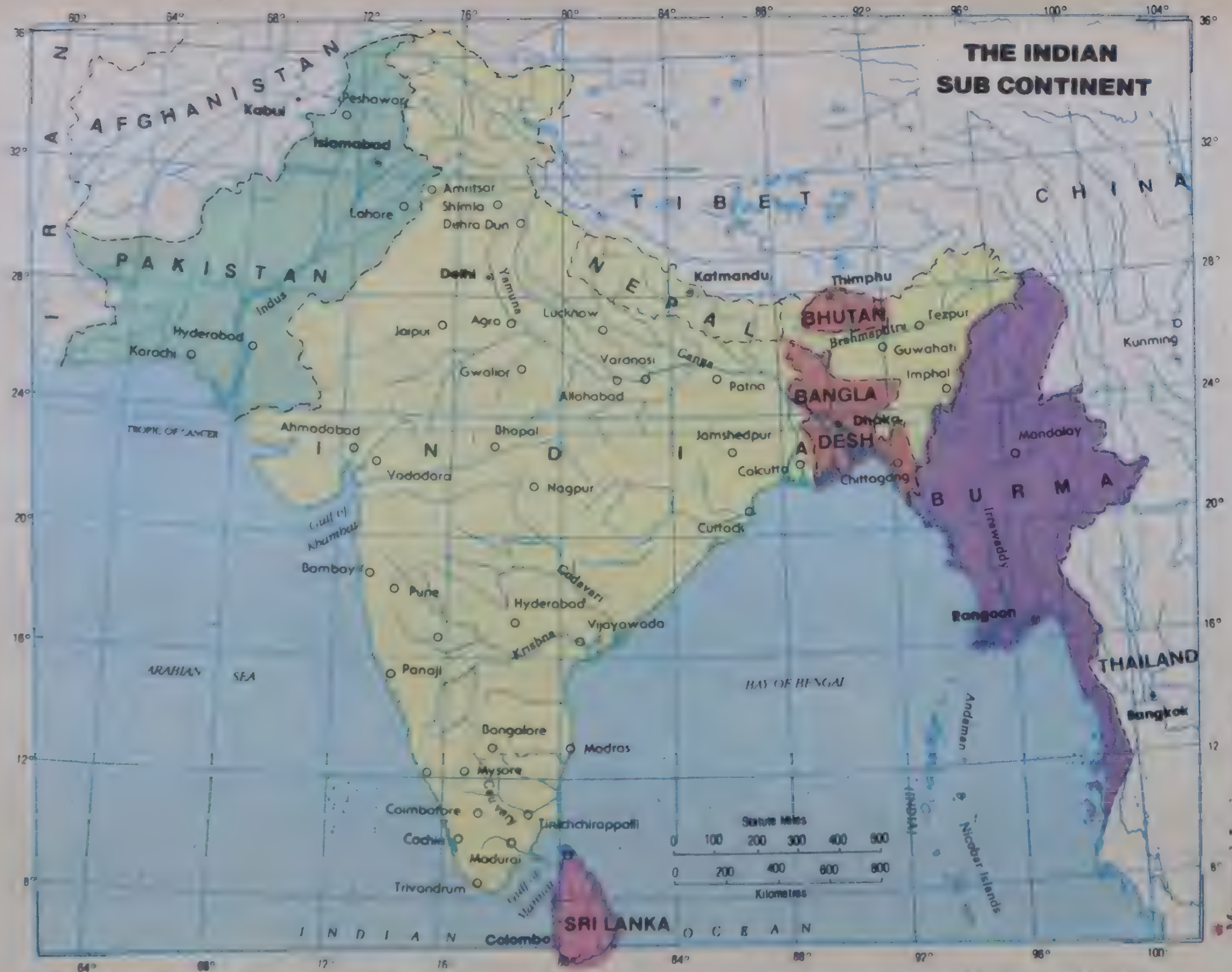
The territorial wat
sea to a distance o
measured from th


EURASIA
80°
70°
60°
50°
40°
120°
130°
140°
150°
160°
OCEAN
LAPTEV SEA
ARCTIC CIRCLE
BERING SEA
Anadyr
Katanga
Bulun
Gizhiga
Magadan
Lena
SEA OF OKHOTSK
Petropavlovsk
Yakutsk
Okhotsk
Ayan
Vitim
Aldan
REPUBLICS
Blagoveshchensk
Port Soviet
Ust Kut
Amur
Khabarovsk
LIST
Chita
Irkutsk
Hailar
Ussuriysk
MONGOLIA
Kirin
NORTH KOREA
SEA OF JAPAN
JAPAN
Erhlein
Changchun
Tokyo
Seoul
SOUTH KOREA
Pyongyang
Beijing
Kichuan
Changyeh
Qingdao
Hwang Ho
CHINA
TROPIC OF CANCER
30°
20°
10°
0°
10°
Chengdu
Changsha
Nanchang
Yangtze Kiang
Guiyang
Taipei
Xiamen
TAIWAN
Putao
Kunming
PACIFIC OCEAN
Lashio
Nanning
Mandalay
BURMA
Hanoi
NORTH VIETNAM
South
Pegu
Chiang Mai
Vinh Linh
Manila
PHILIPPINES
THAILAND
SOUTH VIETNAM
China
Tavoy
Bangkok
KAMPUCHEA
Phnom Penh
Vung Tau
Sea
Ho Chi Minh City
Nam Can
SABAH
HALMAHERA
IRIAN JAYA
MALAYSIA
BRUNEI
Tarakan
Medan
Kuala Lumpur
SARAWAK
KALIMANTAN
SULAWESI
SUMATRA
Singapore
Bandjarmasin
Padang
Palembang
INDONESIA
Semarang
Jakarta
Surabaya
JAVA
100°
120°
130°
140°

tend into the
cal miles
base line.

Maps and Agencies, Madras,


THE INDIAN SUB CONTINENT
IRAN
AFGHANISTAN
Kabul
Peshawar
Islamabad
PAKISTAN
Lahore
Amritsar
Shimla
Dehra Dun
Indus
Hyderabad
Karachi
TIBET
CHINA
NEPAL
Katmandu
Thimphu
BHUTAN
Brahmaputra
Tezpur
Guwahati
Imphal
Kunming
BANGLA DESH
Dhaka
Chittagong
Delhi
Yamuna
Jaipur
Agra
Lucknow
Varanasi
Ganga
Patna
Gwalior
Allahabad
Ahmadabad
Bhopal
Jamshedpur
Calcutta
INDIA
Vadodara
Nagpur
Mandalay
BURMA
Irrawaddy
Cuttack
Gulf of Khambat
Bombay
Pune
Godavari
Hyderabad
Vijayawada
Krishna
Rangoon
Panaji
THAILAND
Bangkok
ARABIAN SEA
BAY OF BENGAL
TROPIC OF CANCER
Andaman
Nicobar Islands
(INDIA)
Bangalore
Madras
Mysore
Cauvery
Coimbatore
Tiruchchirappalli
Cochin
Madurai
Trivandrum
Gulf of Mannar
SRI LANKA
Colombo
INDIAN OCEAN
Statute Miles
0 100 200 300 400 500
0 200 400 600 800
Kilometres
60° 64° 68° 72° 76° 80° 84° 88° 92° 96° 100° 104°
36° 32° 28° 24° 20° 16° 12° 8°

Maps and Agencies, Madras

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The territorial waters of India extend into the sea to a distance of twelve nautical miles

INDEPENDENT NATIONS

USSR with 22.4 million sq. km is the biggest independent State in the world while China with 1,051,551,000 people becomes the biggest State in respect of population. Vatican City has the distinction of being the smallest State in respect of area (44 hectares) and population (about 1000 people).

The brief description of States given below eal primarily with location, area, population, urrency, history and economy. Population gures have been updated with reference to he latest World Population chart of UNFPA. urrency rates, though of 1985, are subject to eavy fluctuations as evident from the fledg-ng economies of some newly independent ountries.

Biggest States

n Area

tate	Area (sq.km.)	Location
.S.S.R.	22,402,200	Europe-Asia
anada	9,976,139	N. America
hina	9,596,961	Asia
.S.A.	9,363,130	N. America
razil	8,511,965	S. America
ustralia	7,682,300	S. Pacific
ndia	3,280,483	Asia
rgentina	2,776,889	S. America
udan	2,505,813	Africa
lgeria	2,381,741	N. Africa

n Population

hina	1,051,551,000	Asia
ndia	746,742,000	Asia
SSR	275,761,000	Europe-Asia
SA	235,681,000	N. America
ndonesia	162,167,000	Asia
razil	132,648,000	S. America
apan	119,492,000	Asia
angladesh	98,464,000	Asia
akistan	98,971,000	Asia
igeria	92,037,000	Arica

Smallest States

In Area

State	Area (sq. km.)	Location
Vatican City	0.44	Europe
Monaco	1.00	Europe
Nauru	22.00	S. Pacific
Tuvalu	26.00	S. Pacific
San Marino	61.00	Europe
Liechtenstein	157.00	Europe
Maldives	298	Indian Ocean
Malta	316	Mediterranean
Grenada	344	Caribbean
St. Vincent	220	Caribbean

In Population

Vatican City	1,000	Europe
Tuvalu	7,349	S. Pacific
Nauru	8,421	S. Pacific
San Marino	21,622	Europe
Liechtestein	26,512	Europe
Monaco	27,063	Europe
Andorra	41,627	Europe
Kiribati	60,302	S. Pacific
Seychells	64,718	Indian Ocean
Dominica	6,300,000	Caribbean

AFGHANISTAN

Cap: Kabul; **Area**: 647,497 sq km.; **Pop. 4,292,000. Lang:** Pakhto (Pashtu), Dari, Persian; **Rel**: Islam; **Currency**: Afghani, AFS. 50=US $1.

Afghanistan, a land-locked republic in Central Asia, is bounded by USSR to the north, Pakistan to the east and south, China to the north-east and Iran to the west. Known originally as Ariana, then as Khorasan (the land of the Rising Sun), Afghanistan was formed as a separate state by Ahmed Shah Durrani in A.D. 1747. Pro-Soviet Govt. since Dec. 1979 when Soviet troop occupied the country.

Agriculture remains the mainstay of the

economy: Sheep-rearing is another main occupation and the chief exports are livestock, fruits, wool and skins. The chief minerals are coal, salt, natural gas, petroleum, iron and copper.

Party Secretary-General: Dr. Najibullah

Mission in India: Emabssy of Afghanistan, Shanti Path, Chanakyapuri, New Delhi-110 021. Tel: 603331.

ALBANIA

Cap: Tirana; **Area:** 27,748 sq. km; **Pop:** 29,85,000; **Lang:** Albanian; **Rel:** officially abolished; **Currency:** Lek; $1=9.33 leks.

Albania lies on the west coast of the Balkan peninsula in south-east Europe. It is bordered by Yugoslavia to the north and east Greece to the south and the Adriatic and Ionian Seas to the west. Albania was first established as an independent state in 1912. Communist Government.

More than 40 per cent of the land is farm-land producing wheat, maize, sugar beet, cotton and tobacco and supporting a heavy livestock population mainly sheep and goats. The important minerals are coal, oil, chrome, copper and nickel. Industries include cotton textiles, woollen fabrics, leather goods, petrol, cement, sugar, beer and cigarettes.

Head of state: Ramiz Alia, **P.M:** Adil Carcani.

ALGERIA

Cap: Algiers: **Area:** 2,381,741 sq. km. **Pop.** 21272000. **Lang:** Arabic and French; **Rel:** Islam; **Currency:** Dinar; $1=5.27 DA.

Algeria is an independent republic in North Africa and extends for 640 miles along the shores of the Mediterranean between Tunisia and Libya on the east and Morocco and Mauritania on the west. Mali and Niger are to the south. The plains lying along the coast are very fertile. The Atlas Mountains reaching to altitudes of some 7000 ft. split the country into two. Algeria became an independent republic on july 3, 1962.

Agricultural products include wheat, barly, potatoes, artichokes, flax and tobacco. Fruits like dates, pomegranates and figs grow in abundance. Wine and olive oil are also produced. Cattle raising, however, is th most important occupation. Important mine als are iron, zinc, mercury, copper, antimon phosphates and petroleum.

President: Chadli Benjedid, **P.M:** Abd Hamid Brahimi.

Mission in India: Embassy of the Dem cratic and Popular Republic of Algeria, Anand Lok, New Delhi- 110 049. Tel: 65521

ANDORRA

Cap: Andorre-la-Vieille; Area: 464 s km; **Pop:** 41627. **Lang:** Catalan; **Rel:** Chris ian; **Currency:** (France), Peseta (Spain).

The principality of Andorra, founded 1278, lies in the valleys of Eastern Pyrenee between France and Spain, about half-wa between Barcelona and Toulouse.

Andorra has no proper constitution and international status is dubious. It is nominal subject to the suzerainty of France and th Bishop of Urgel in Spain.

The government is carried on by a Coun of 28 elected members.

Andorra is an agricultural country, cerea potatoes and tobacco being the princip crops. Iron, lead, alum, stone and timber a the principal products, though tourism is th main source of income.

Head of Govt: Josef Pintat Solaus. Fi Syndic: Francesc Cerqueda- Pascuet.

ANGOLA

Cap: Luanda; **Area: 1,246,699 sq. kn Pop:** 8,540,000; **Lang:** Portuguese, Ban **Rel**: Tribal and Christian; **Currency:** Kwa za; $1=29.92 Kwanza.

Angola, formerly Portuguese West Afric is bounded by Zaire and Zambia on the no and east and by Botswana and Namibia the south. The Atlantic lies to the we Angola became an independent state 1975.

The important food crops are millet, mai and cassava. The main cash crops are coffe cotton, oil palm and sisal. Industries co prise textiles; brewing, cement, oil refini and sugar. Angola is famous for its ge stones, and produces about one-tenth of t total world supply. The main exports a crude petroleum, coffee, diamonds, iron o fish, sisal and timber.

President: Jose Eduardo dos Santos.

ANTIGUA & BARBUDA

Cap: St. John's; **Area:** 280 sq. km; **Pop:** ,000; **Lang:** English and Patois: **Rel:** Christ- n; **Currency:** Eastern Caribbean US $1=EC$2.70.

Antigua, one of the islands of British West ndies, is politically linked to two islands arbuda and Redonda. Redonda is uninha- ited. Antigua and Barbuda became inde- endent on Nov. 1,1981.

The population is of mixed European legro origin. The economy is agricultural. ugar and sea island cotton are the main xports. Tourism is a major source of income.

Governor-General: Sir Wilfred benezer Jacobs **P.M:** Vere C. Bird.

ARGENTINA

Cap: Buenos Aires; **Area:** 2,766,889 sq. m; **Pop:** 30094000; **Lang:** Spanish; **Rel:** hristian; **Currency:** Pesos. $1=253.3 Pesos.

Argentina lies at the tip of South America xtending for some 2300 miles from Bolivia to ape Horn. Its maximum width is 930 miles. he highest peak in the Americas, *Aconca- ua*, is in Argentina. Argentina became an ndependent republic in 1810.

Argentina abounds in deposits of coal, ead, copper, zinc, gold, silver and sulphur. etroleum is also found. Meat packing is the hief industry, with flour milling coming econd. Agriculture and animal husbandry orm important segments of the economy.

President: Dr. Raul Alfonsin

Mission in India: Embassy of the Argen- ne Republic, B-8/9, Vasant Vihar, Paschimi larg, New Delhi-110 057. Tel: 671345.

AUSTRALIA

ap: Canberra. **Area:** 7,682,300 sq. km; **op:** 15,751,500; **Lang:** English, **Rel:** Christ- n; **Currency:** Dollar. US$1=1.39 Dollars.

Australia is a young nation which has uickly established itself in an ancient land. lthough rich in natural resources, its re- noteness and harsh landscape have posed nenviable challenges in developing the ountry's vast potential. It is the world's argest island and a continent washed on its estern shoreline by the Indian Ocean and n its east coast by the Coral and Tasman eas of the South Pacific Ocean.

New Capital for Argentina

Argentina is abandoning its 106-year old capital Buenos Aires and building a new one, 800 km south in Patagonea, on the Negro river.

President Raul Alfonsin said that it was decided to move the capital to Rio Negro province because "it will shake Argentina out of its decade-long slump and trigger a new frontier, pioneering dynamism". Argentina has huge foregin debts totalling $ 50 billion (about Rs. 62500 crores) and sceptics wonder where the money for the $ 3.2 billion (about Rs. 4000 crores) project, spread over 4,620 sq.km, is to come from.

The Capital, Buenos Aires, with its 10 million people is holding 30 percent of the national population. Buenos Aires is a busy port on the Atlantic coast while the proposed capital is hundreds of kms South, about 10 km east of Videma, also near the Atlantic.

It has a unique assortment of flora and fauna not found elsewhere in the world. The number of Aboriginals living in Australia is about 1,60,000. About half the Aboriginals live in cities or towns. They participate at all levels of life of the Australian community. Many Aboriginals still live in the remote areas of Australia and prefer traditional tribal oriented lifestyles. The boomerang was invented by the Aboriginals who have lived in Australia for more than 40,000 years.

Australia is a multicultural society. Four out of 10 Australians are first or second generation migrants. One in five of the population is overseas born. In the past most migrants came from Europe, but now, under Australia's non-discriminatory immigration policy, they come from well over 100 countries. One of the most sparsely populated nations, it is also one of the most highly urbanised with 85 per cent of the population living in cities. Vast areas of the continent receive only very small amounts of rainfall limiting development mainly to the coastal fringes

Australia is a Federation with power divided broadly between the national Government and six State governments. The powers of the Australian Parliament are laid down in a written Constitution which came into force on January 1, 1901, when the colonies federated to form the Commonwealth of Australia. The States are New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania.

State Capitals: Sydney, Melbourne, Brisbane, Adelaide, Perth and Hobart.

In March 1986, Queen Elizabeth II signed the Proclamation of the Australia Act 1986, which severed Australia's last remaining constitutional links with Britain. Queen Elizabeth is formally Queen of Australia.

During the 20th century Australia has developed into a modern industrial nation built upon the solid foundation of an efficient and productive agricultural system and large reserves of minerals. Australia is now an important producer and exporter of a wide range of agricultural products especially wool, wheat and meat and its mines provide minerals and metals of many types for use by local and overseas industries, including coal, iron-ore, bauxite, gold, silver, lead, zinc, copper nickel, oil and natural gas.

Australia celebrates its Bicentenary in 1988 to mark the 200th anniversary of European settlement. Australia Day is celebrated on January 26.

Head of State: Governor-General, Sir Ninian Stephen. **PM:** Mr. R. J. L. (Bob) Hawke.

Mission in India: High Commission of Australia, 1/50-G, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 601336.

AUSTRIA

Cap: Vienna; **Area:** 83,853 sq. km. **Pop:** 74,89,000; **Lang:** German; **Rel:** Christian; **Currency: Schilling:** $1 = 16.56 Schilling.

A republic of Central Europe, Austria is bounded by W. Germany, Switzerland and Liechtenstein in the west, Czechoslovakia and W. Germany in the north, Hungary in the east, and Italy and Yugoslavia in the south. Over 65 per cent of the country is mountainous. Austria, a republic since 1918, regained full sovereignty after World War II in 1955.

Economy depends mainly on mining and manufacturing, trade and services. Austria has iron ore and oil deposits, lignite, magnesite, lead and some copper.

President: Dr. Kurt Waldheim. **Chancellor:** Dr. Franz Yranitzky.

Mission in India. Embassy of Austri
EP-13, Chandragupt Marg, Chanakyapu
New Delhi-110 021. Tel: 601112.

Consulate: 96/1, Sarat Bose Road, Calcu
ta-26. Tel: 47-2795.

Kothari Building, Nungambakkam Hig
Road, Madras-600 034.

THE BAHAMAS

Cap: Nassau; **Area:** 13,939 sq. km.; **Po**
2,28,000; Lang: English; **Rel:** Christia
Currency: Bahamian $1.05 = £1 Sterling.

The Commonwealth of the Bahamas is a
archipelago lying off the south-east coast
Florida. The Bahamas consists of more tha
700 islands and 2000 cays and rocks. On
about 30 of the islands are inhabited. Th
largest island is *Andros* but *New Providen*
is the most populous. The capital *Nassau*
situated on this island. Eighty-five per cent
the population is *Negro*, the rest are *Eur*
peans.

The Bahamas became internally self-go
erning in 1964 and fully independent in 197

Education is free and compulsory betwee
the ages of 5 and 14.

Tourism is the main industry. Fishin
constitutes the main occupation. Vegetabl
and fruits are also grown.

Governor-General: Sir Gerald Cas
P.M: Lynden O. Pindling.

BAHRAIN

Cap: Manama; **Area:** 669 sq. km., **Po**
384,221; **Lang:** Arabic and English; **Re**
Islam; **Currency:** 0.37600 Dinar = US $ 1

Bahrain, which became an independe
state on Aug. 15, 1971, is an Arab sta
comprising 33 small islands in the Arabi
Gulf. Bahrain is the biggest of the islands a
has lent its name to the whole archipelago.
is an independent monarchy.

The traditional occupations of catt
breeding, agriculture and fishing are s
practised but many modern industries ha
also come up. Oil accounts for the lion's sha
of the state revenues.

The people enjoy a very high standard
life. Education is free upto the seconda
level and heavily subsidised with sch
larships at higher levels.

Amir: Shaikh Isa bin Sulman Al Khalifa. **.M.:** Shaikh Khalifa bin Sulman Al-Khalifa.

BANGLADESH

ap: Dhaka; **Area:** 143,998 sq. km.; **Pop:** 8,100,000; **Lang:** Bengali and English; **Rel.** slam; **Currency:** Taka. $1 = 30.30 TK.

Bangladesh is bounded on three sides by ndia. Burma lies to the south-east and onstitutes the only non-Indian boundary of angladesh. Bangladesh became an inde-endent state in 1971.

The economy is primarily agricultural. ice is the most important food crop. Bang-adesh is the biggest producer of jute in the orld, commanding 80 per cent of the orld's total production. Industrially, Bang-adesh is backward. Textiles, sugar, jute, tea, aper, fertiliser, natural gas, power genera-ion, steel, garments, tobacco, rubber, che-nicals and machineries comprise the bulk of ndustrial production.

President: Lt. Gen. Hossan Mohammad rshad. **P.M :** Mizanur Rahman Chowdhury.

Mission in India: 1. High Commission of angladesh, 56-Ring Road, Lajpat Nagar-III, ew Delhi-110 024. Tel: 615668. 2. Deputy High Commission of Bangladesh, 9, Circus venue, Park Circus, Calcutta-7. Tel: 44-208. 3. Bangladesh Visa Office, Agartala, ripura.

BARBADOS

ap: Bridgetown; **Area:** 430 sq. km.; **Pop:** 62,000; **Lang:** English, **Rel:** Christian; **Currency:** Barbados dollar (BD). US $1 = BD $2.01.

The island of Barbados is the most easterly f the Caribbean islands, lying about 250 niles north east of the mainland of South America. It is included in the Windward sles. Barbados became fully self-governing within the Commonwealth on Nov. 30, 1966.

Agriculture and tourism dominate the eco-omy of Barbados. Sugar, molasses and rum ccount for 90 per cent of exports.

Head of State: Queen Elizabeth II. ***Gov-ernor-General:*** Sir Hugh Springer. **P.M :** Errol Darrow.

BELGIUM

Cap: Brussels; **Area:** 30,521 sq. km.; **Pop:** 9,858,000; **Lang:** Dutch and French; **Rel:** Christian; **Currency:** Belgian Franc. $1 = ±48 BF.

Belgium, named after the Belgae, people of ancient Gaul who crossed the Rhine about the 6th century B.C., has had a turbulent history. It became an independent monarchy in 1830. During both the world wars it was occupied by Germany but freed itself by the end of those wars.

Belgium is located in the very heartof Europe, bordered by the Netherlands in the north, W. Germany and Luxembourg in the east, and France in the south.

Belgium is the most densely populated country in Europe. Although Belgium is essentially a manufacturing country, agriculture and forestry are also very important. The main crops are oats, rye, wheat, potatoes, barley and sugar beets. Coal is the country's only important mineral. Principal industries are steel and metal products, textiles, glass, fertilizer, sugar, heavy chemicals etc. Antwerp is the world's 4th largest port and also the world's biggest diamond-trading centre.

Head of State: King Baudouin. **P.M :** Dr. Wilfried Martens.

Mission in India: Embassy of Belgium, 50-N, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 608295.

Consulate: 5/1A, Hungerford St., Calcutta-17. Tel: 44-3886.

BELIZE

Cap: Belmopan; **Area:** 22,965 sq. km. **Pop:** 157,700; **Lang:** English; **Rel:** Christian; **Currency:** Dollar. US $ 1 = B$2.

Belize, formerly known as British Honduras, is a Central American republic with the Caribbean to the east, Mexico to the north-west and Guatemala to the south-west. Originally a British colony, it was granted autonomy in 1964 and became completely independent in 1981. The name Belize was adopted in 1973. Guatemala claims Belize as one of its territories but the claim has not been conceded by Britain. The original capital Belize City was laid waste by a hurricane in 1961. The capital was shifted to Belmopan, an inland town, in 1970

More than half the population is made up of the so-called Creoles or English-speaking

Visa Restrictions: A Year Of Stress

For the Indian traveller, 1986 was a year of unprecedented stress and strain.

Britain imposed visa curbs on Indians, Pakistanis and Bangladeshis from October 15. The controls against the Indian Sub-continent, Nigeria and Ghana, purported to be to curb illegal immigration, were termed 'racist' by India.

British High Commission in India has stressed that getting visas will be 'painless'.

The visa can be obtained either by visiting the High Commission Offices in New Delhi, Calcutta, Bombay and Madras or by mail or a messenger. Except in cases where a personal interview becomes necessary, all visas will be issued within 24 hours.

Visas are issued to those called personally between 8.30 am and 11.30 am on all days except Saturdays, Sundays and holidays.

Fee for a single entry visa to UK will be Rs. 240. Multiple entry visa will cost Rs. 480 and settlement visa Rs. 500.

Meanwhile India has also raised the visa fee from £ 10 at present to £ 12. A transit visa will cost £ 8.

Indians constitute an important segment of tourists to Britain from countries other than the US and Europe. Of the 2,53,000 Indians who visited Britain in 1985, 1,22,000 were tourists. The rest hold Indian passports but enjoyed the right of residence in Britain.

The number of Indian tourists to Britain increased eight-fold after India relaxed foreign exchange regulations in 1978.

West Germany, in order to stem the flow of assylum seekers announced stricter measures against 'problem states' (which also include India and Sri Lanka) in September last. Tourist visas from these states will, hereafter last for only four instead of eight weeks.

Responding to Western requests, GDR has closed entry for transit passengers having no valid visas of other countries.

Indian nationals visiting Singapore also will have to obtain visas. But Singapore has not specified a date from which they will enforce this decision.

The US has started collecting a visa fee of $ 15 (about Rs. 190) from Indians from September. The validity and number of entries for visiter visas remains unchanged. A B-1 (Business) or B-2 (Tourist) visa may be issued for multiple entries for a maximum period of 5 years.

In spite of the imposition of new irksome curbs, there is a silver lining too for the Indian traveller. An understanding has been reached with Austria, Italy, Netherlands, Belgium, France, Germany, Spain, Norway, Sweden and Finland to liberalised visa procedures and enable Indians to obtain visas even in third countries on the basis of letters of introduction by the Indian missions.

Post-script: Canada announced in November, '86 that all visitors from India need visas hereafter.

Negroes, found mostly in the coastal regions. The indigenous (Red) Indian population consists of Mayans and Kekchis who live mostly in the reservations.

Forest products especially timber form a major export item. Sugar and citrus fruits form the major products. Wild life includes the curious creature mantee—an amphibian mammal—and several varieties of reptiles.

Gov. Gen : Dame Elmira Minita Gordon.
P.M.: Manuel Amadeo Esqivel.

BENIN

Cap: Porto Novo; **Area:** 112,622 sq. km **Pop:** 3,890,000; **Lang:** French and Triba dialects; **Rel:** Tribal and Islam; **Currency** Franc CFA. 1 French Franc = 50 Franc CFA

The People's Republic of Benin (formerl Dahomey) is located north of the Gulf c Guinea in West Africa. It is bounded b Togo, Upper Volta, Niger and Nigeria.

Formerly, one of the provinces of Frenc West Africa, Benin became an independer state on Aug. 1, 1960. The country had been plagued by coups and counter-coups.

Benin's principal products are palm oil, kernels, peanuts, cotton, coffee and tobacco.

President: Brig-Gen. Ahmed Kerekou. **Pres. of National Exe. Council:** Brig.-Gen. Ahmed Mathieu Kerekou.

BERMUDA

Cap: Hamilton; **Area:** 53.3 sq. km.; **Pop** 54,893; **Lang:** English; **Rel:** Christian; **Currency:** Bermuda dollar. US $ 1 = 1 B$.

Bermuda is a group of some 300 coral islands in the Western North Atlantic. They are said to have been discovered by a Spaniard Juan de Bermudez in 1650. In 1968 it was given the status of a British Associate state with full internal autonomy.

Negroes make up two-thirds of the population. Persons of British or Portuguese stock form the rest.

The chief crops are vegetables, flowers (Easter lilies specially), bananas and citrus fruits. Tourism is the main source of revenue.

Gov. Viscount Dunrossil. **Premier:** John W. D. Swan.

BHUTAN

Cap: Thimphu; **Area:** 47,000 sq. km.; **Pop:** 1,388,000; **Lang:** Dzongkha and Nepali; **Rel:** Buddhist and Hindu; **Currency:** Ngultrum. Indian Rupee also legal tender.

Bhutan is a mountain state in the Himalayas, with China on the north and India on the south. It is an absolute monarchy.

Agriculture is the chief occupation. The principal products are rice, corn, and millet and forest produce like wax, lac, musk, etc. Timber and fruits are exported.

King: Jigme Singye Wangchuck.

Mission in India: Royal Bhutanese Embassy, Chandragupta Marg, Chanakyapuri, New Delhi-110 021. Tel: 609217.

BOLIVIA

Cap: La Paz; **Area:** 1,098,581 sq. km.; **Pop:** 6,200,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Peso boliviano. ($b). US $1 = $b 45,000.

Bolivia, a South American state, lies astride the Andes. It is bounded by Brazil in the north and north east, Paraguay in the east, Argentina in the south and Chile and Peru in the west. Lake Titicaca on the Peru-Bolivian border is the highest lake in the world (12,506 ft.).

Originally part of the ancient Inca Empire, Bolivia became independent in 1825. Bolivia has been named after Simon Bolivar, the famous South American fighter for freedom. Bolivia, like most Latin American states, has had a number of coups and countercoups.

Agriculture, the mainstay of the country, engages 70 per cent of the people. Tin mining is the most important industry. Bolivia produces about 30,000 tons of tin, nearly 15 per cent of the world's total output. Antimony and tungsten are the next most important minerals.

President: Victor Paz Estenssoro.

Mission in India: Consulate of Bolivia, 20, Loudon St., Calcutta-700 016. Tel: 443283.

BOTSWANA

Cap: Gaborone; **Area:** 600,327 sq. km.; **Pop:** 1,042,000; **Lang:** English and Tswana; **Rel:** Tribal and Christian; **Currency:** Pula. US $1 = P 1.867.

The Republic of Botswana (formerly known as Bechuanaland) is located in Southern Africa, and is bounded by South Africa in the south and east, Namibia in the west and Zimbabwe in the north east. Botswana became independent in Sept. 1966 and assumed its present name.

Cattle industry is the most important economic activity. Beef is the main export. Diamonds, manganese, asbestos, coal, copper and nickel are leading mineral resources.

President: Dr. Quett Ketumile Joni Masire.

BRAZIL

Cap: Brasilia; **Area:** 8,511,965 sq. km.; **Pop:** 132,648,000; **Lang:** Portuguese; **Rel:** Christian: **Currency:** Cruzados (CZ $) 1 US $ = 13.77 CZ $.

Brazil, the largest South American state both in area and population, lies more or less in the centre of South America. It shares its frontiers with ten other countries—Argentina, Bolivia, Paraguay, Uruguay, Peru, Colombia, Venezuela, Guyana, Suriname and French Guiana. Its coastline is confined to the Atlantic sea-board. The bulk of Brazil lies in the tropics. It is a land of dense forests and mighty rivers. The Amazon and the Sao Francisco cover the north of the country.

More than half of Brazil's population now live in the cities, which are responsible for generating about 35 per cent of the GNP. Among the most important cities are: *Sao Paulo, Rio de Janeiro, Belo Horizonte, Recife, Salvador and Brasilia.* Brasilia, a showpiece of modern architecture and town planning, was declared the capital on April 21, 1960.

Brazil's main industries are concentrated at Sao Paulo—shipbuilding, motor cars, textiles, foodstuffs, metals and chemicals. Brazil is the world's largest producer of coffee, bananas, manioc and sugar cane and the second biggest producer of organges, maize and cocoa.

The major exports of Brazil are soya beans, sugar, coffee, iron ore, cocoa beans, maize, sisal and tobacco.

Brazil possesses vast deposits of mineral wealth—iron, phosphates, uranium, manganese, copper, coal, platinum and gold. Oil is a state monopoly. The wax which is used for phonograph records and insulation is a monopoly product of the state.

President: Jose Sarney.

Mission in India: Embassy of Brazil, N-90, Panchshila Park, New Delhi-110 017. Tel: 6436791.

BRUNEI

Cap: Bander Seri Begawan; **Area:** 5765 sq. km.: **Pop:** 214,440; **Lang:** Malay, Chinese; **Rel:** Islam; **Currency:** Brunei Dollar with the par value of 0.290299 gramme of gold.

The Sultanate of Brunei on the northern side of the island of Borneo lies between two Malaysian territories, Sabah and Sarawak. Brunei Malays, mostly Muslim, form more than half of the population. The Sultanate, once a powerful and independent kingdom, was annexed by Britain who in 1971 granted Brunei full internal autonomy.

Oil and natural gas are Brunei's most valuable resources. Much of Brunei's oil now comes from the offshore Ampa field. Rice is the chief food crop. Other crops are coconuts, sago and rubber. Rubber is an expor item.

Sultan: Sir Muda Omar Ali Saifuddi Sa'elul Khairi Waddin. **P.M** : Hassanal Bo kiah.

BULGARIA

Cap: Sofia; **Area:** 110,912 sq. km.; **Pop** 8,942,000; **Lang:** Bulgarian; **Rel:** Christiar **Currency:** Lev. US $ 1 = 0.999 leva.

Bulgaria in south-east Europe is bounde by the Black Sea on the east, Turkey an Greece on the south, Yugoslavia on the we and Romania on the north.

Bulgaria was founded in 681 and became socialist republic on 9 September, 1944.

The principal crops are wheat, rye, barle maize, sugarbeet, oats, corn, potatoes an tobacco. Coal, iron ore, copper, lead an zinc are the main mineral resources.

President of the State Council and Secre ary-General of the Communist Party Tode Zhivkov. Chairman, Council of Minister George Atanassov.

Mission in India: Embassy of the People Republic of Bulgaria, E.P. 16/7, Chandragup ta Marg, Chanakakyapuri, New Delh 110 021. Tel: 607411.

BURMA

Cap: Rangoon; Area: 676,552 sq. km.; **Pop** 38,513,000; **Lang:** Burmese and Tribal; **Re** Buddhism; **Currency:** Kyat. US $1 = K. 7.3

A republic of south-east Asia, Burma bordered by Bangladesh, India, China, La and Thailand. The country is watered by th *Irrawady* which forms one of the most ferti basins in all Asia.

Originally a part of British India, Burm became a separate unit of the British Cor monwealth in April 1937. It became independent country on January 4, 1948.

Burma is known as the "rice bowl of the F East". The chief minerals are petroleu lead, tin, zinc, tungsten, copper, antimon silver and gems. The rubies, sapphires a jade found in Burma are especially famou Teakwood is exported on a large scale.

President: San Yu. **P.M** : U Maung Mau Kha.

Mission in India: Embassy of Burma, P No. 3, Block No. 50/F, Nyaya Marg, Chanak puri, New Delhi-110 021. Tel: 600251.

BURKINA FASO

Cap: Ouagadougou; **Area:** 274,200 sq. km.; **Pop:** 6,768,000; **Lang:** French and native anguages; **Rel:** Tribal and Muslim; **Currency:** Franc CFA. US $ 1 = 512 francs.

The Republic of Burkina Faso is a land-ocked state in West Africa surrounded by Mali, Niger, Benin, Togo, Ghana and Ivory Coast.

Formerly a province of French West Africa called *Upper Volta* the country gained full ndependence in 1960. Name changed to Burkina Faso in 1984.

It is almost exclusively an agricultural country with 80 per cent of the population dependent on agriculture. Livestock raising s highly developed. Principal crops are sorghum, millet, yams, cotton, rice, peanuts and karite. Industry is limited to local handcrafts.

Head of State and Govt: Capt. Thomas Sankara.

Mission in India: Consulate General, 186 Sarat Bose Road, Calcutta-700 029. Tel: 46-1164.

BURUNDI

Cap: Bujumbura; **Area:** 27,834 sq. km.; **Pop:** 4,503,000; **Lang:** French and Kirundi; **Rel:** Tribal and Christian; **Currency:** Burundi Franc. US $ 1 = 128.3.

The Republic of Burundi is a small state in Eastern Africa, bordered by Zaire in the west, Rwanda in the north and Tanzania in the east and south.

Burundi attained independence on July 1, 1962. Prior to independence, it formed part of the Belgian-administered UN Trust Territory of Rwanda-Urundi.

The population consists of *Hutu* or *Bahutu* ribesmen, *Tutsi* or *Watutsi* people and *Twa* or *Batwa pygmies.* The economy is entirely agricultural, manioc and sweet potato, being the important food crops and coffee the major cash crop.

President and Party Chairman: Col. Jean-Baptiste Bagaza.

CAMEROON

Cap: Yaounde; **Area:** 475,442 sq. km **Pop:** 9,467,000; **Lang:** French and English; **Rel:** Tribal and Christian; **Currency:** Franc CFA. French franc 1 = 50 franc CFA.

Located in West Africa, Cameroon is bounded by the Gulf of Guinea, Nigeria, Chad, the Central African Republic, Gabon, the Congo Republic and Equatorial Guinea.

Cameroon, originally part of the German colony in W. Africa, became a republic in 1960. In 1961, British Cameroon was federated with Cameroon, forming the Federal Republic of Cameroon.

Cameroon has a central Government and two provincial governments—East Cameroon and West Cameroon.

Cameroon is mainly an agricultural country raising cocoa, palm oil, coffee, rubber, groundnuts, bananas, and cotton. East Cameroon is industrially developed, aluminium and chemicals being the main industries.

President: Paul Biya. **P.M :** Bello Bonda Maigari.

890000000 Illiterates In the World

Close to one billion people in the world cannot read and write sufficiently to function in their societies, with most of them concentrated in the developing world, according to the UN Educational Scientific and Cultural Organisation.

There are an estimated 890 million illiterates in the world, of which some 60 per cent are women, the UNESCO said in a fact sheet.

International Literacy Day, an annual event scheduled for September 8, is intended to call attention to this crucial problem and to recognise progress made in campaigns towards its eradication.

Most of the world's illiterates — 98 per cent — are located in the developing world, with Africa having the highest illiteracy rate, 54 per cent, followed by Asia with 36.3 per cent and Latin America 17.3 per cent.

In the United States, it is estimated that 20 million Americans may be sufficiently illiterate, meaning that they cannot read and write sufficiently to function properly.

CANADA

Cap: Ottawa; **Area:** 9,976,139 sq. km.; **Pop:** 25,302,000; **Lang:** English & French; **Rel:** Christian; **Currency:** Dollar. US $ 1 = Canadian $ 1.39.

Canada is the second largest country in the world. It occupies all of the northern-most part of N. America except Alaska in the west and the small French islands of St. Pierre & Miquelon. It is bounded in the north by the Arctic Ocean, Baffin Bay and the Davis Strait, in the north east and in the east by the Atlantic Ocean, in the south by the USA, in the west by the Pacific Ocean and in the north-west by the US state of Alaska. Twenty-seven per cent of the population speak French and the rest English.

Canada is a federation comprising 10 provinces and 2 territories. The federal capital is at Ottawa. It is a member of the Commonwealth. By the historic 'Canada Act of 1982' Britain transferred constitutional powers to Canada.

The provinces with more than a million population are Ontario (8), Quebec (6), British Columbia (2), Alberta and Manitoba (1).

Provinces	Capital	Area (sq. km.)
Alberta	Edmonton	644,390
British Columbia	Victoria	929,730
Manitoba	Winnipeg	548,360
New Brunswick	Fredericton	72,090
Newfoundland	St. John's	371,690
Nova Scotia	Halifax	52,840
Ontario	Toronto	891,190
Prince Edward Island	Charlottetown	5,600
Ouebec	Quebec	1,356,790
Saskatchewan	Regina	570,700
Territories		
Yukon Territory	Whitehoure	478,970
Northwest Territories	Yellowknife	3,293,020

From a primarily agricultural country famous for logging, fishing and fur, Canada has transformed itself into one of the leading industrial countries of the world. Automobile parts head the export list, followed by wood pulp and timber. Wheat is still a major item of export. Canada's industrial structure has been built up mainly by foreign investment
especially USA.

Canada is today the world's largest pro
ducer of asbestos, silver, nickel, and zinc. I
is rich in many other minerals, iron, copper
uranium, cobalt, sulphur, lead and gold. I
has vast reserves of oil and natural gas
Though Canada is ninth in the world in crude
oil production it is Canada's biggest dolla
earning mineral.

Head of State: Queen Elizabeth II. **Gov**
Gen. Jeanne Sauve. **P.M.:** Brian Mulroney

Mission in India: High Commission o
Canada, 7/8 Shantipath, Chanakyapuri, New
Delhi-110 021. Tel: 608161.

CAPE VERDE

Cap: Praia; **Area:** 4033 sq. km.; **Pop:** 296,093
Lang: Portuguese; **Rel:** Christian; **Currency**
Escudo Caboverdianos. US $ 1 = 89.27.

Cape Verde, formerly a Portuguese col
ony, lies in the Atlantic Ocean, off wes
Africa. It consists of 10 islands and 5 islet
divided into two groups, Windward an
Leeward. The soil is poor and cultivatio
very little. Food is a major item of impor
Salt, fish, coffee and groundnuts are ex
ported: Cape Verde became independen
on July 5, 1975.

When the Portuguese discovered the island, it was uninhabited. Portuguese settler
and the Negroes they brought in to wor
their plantations, form the basic stock of th
present population.

President: Aristides Maria Pereira. **P.M**
Maj. Pedro Verona Rodirigues Pires.

CEN. AFRICAN REPUBLIC

Cap: Bangui; **Area:** 622,984 sq. km.; **Pop**
2,508,000; **Lang:** French and Sangho; **Re**
Christian and Tribal; **Currency:** Franc CF
French franc 1 = 50 franc CFA.

The Central African Republic lies in th
heart of equatorial Africa. It is bounded b
Chad to the north, Sudan to the east, People
Republic of the Congo and Zaire to the sout
and Cameroon to the west.

The Central African Republic becam
self-governing in 1958, and fully independen
in 1960, as a member state of the Frenc
Community. In 1966 Col. Jean Bedel Bokas
Chief of Staff of the Army, ousted Preside

David Dacko and seized control of the government.

Bokasa was made President for life in 1972. n 1976, he set himself up an emperor, after he Napoleonic pattern. In 1979 a popular uprising drove out this two-bit Napoleon. nterestingly enough, it was Bokasa's own predecessor in office, viz. David Dacko, who overthrew the self-styled Emperor in a bloodless coup on Sept. 20, 1979.

Principal agricultural products are cotton and coffee. Cotton leads in exports. Diamonds account for half the country's export earnings. Uranium mining is becoming increasingly important.

Head of State and Govt. Gen. Andre Kollingba.

CHAD

Cap: Fort-Lamy; **Area:** 1,284,000 sq. km.; **Pop:** 4,901,000; **Lang:** French and Arabic; **Rel:** Muslim and Tribal; **Currency:** Franc CFA. French f 1 = 50 CFA.

The Republic of Chhad is bounded by Libya on the north, Sudan on the east, the Central African Republic on the south and Cameroon and Niger on the west.

Formerly a province of French Equatorial Africa, Chad became independent on August 11, 1960.

The country's economy is entirely rural and based on agriculture and animal husbandry. Cotton and meat are the main exports. Cattle, sheep & camels are raised.

Hissene Habre was sworn in as President on 21 Oct. 1982. But in June 1983 the Libyan-backed forces of former Pres *Goukouni Oucddei* reoccupied part of the country, and in early 1985 the country remained partitioned between the two sides.

CHILE

Cap: Santiago; **Area:** 756,626 sq km; **Pop:** 11,878,000; **Lang:** Spanish; **Rel:** Roman Catholic; **Currency:** Peso. US $ 1 = 200 Pesos.

The Republic of Chile lies on the Western seaboard of South America, occupying the strip of land between Peru and Bolivia in the north to Cape Horn in the south.

Originally a Spanish colony, Chile became ndependent on September 18, 1810 First South American country to elect Marxist Govt. (1970), fell in military coup (1973).

Though wheat and other cereals are cultivated. Chile has to import about one-third of its food. It is the world's largest producer and the largest exporter of copper. There are important deposits of nitrate, gold, silver, lithium, molybolennum and iron ore. Oil production provides about half the oil required by the country. Exports marine products and fruits.

President : Gen. Augusto Pinochet Ugarte.

Mission in India: Embassy of Chile, 1/13 Shantiniketan, New Delhi-110 021. Tel: 671363.

CHINA

Cap: Beijing (Peking); **Area:** 9,561,000 sq. km.; **Pop:** 1,051,551,000; **Lang:** Chinese (Mandarin); **Rel:** Buddhist and Taoist; **Currency:** Yuan. US $ 1 = 2.53 Yuan.

The most populous country in the world and the third largest in area, China is bounded by the USSR, Mongolia, N. Korea, Vietnam, Burma, India, Bhutan, Nepal, Pakistan and Afghanistan. China is made up of 21 provinces, 5 autonomous regions and three municipalities—Peking, Shanghai and Tientsin.

One of the oldest countries in the world, China became a republic in 1911. The People's Republic of China was proclaimed in Peking on October 1, 1949.

On Oct. 26, 1971 China was admitted as a member of the UN displacing Nationalist China (Taiwan).

China is essentially an agricultural country. The main crops are rice, other grains, tea, tobacco, sugarcane, jute, soya, groundnut and hemp. The main forest products are teak and ting oil. Among principal industries are cotton and woollen mills, iron, leather and electrical equipments. The chief minerals are coal, manganese, iron ore, gold, copper, lead, zinc, silver, tungsten, mercury, antimony and tin. Petroleum industry is steadily growing

China is a nuclear power well advanced in space technology. It launched its first earth satellite in April, 1970.

State President: Li Xiannian. **Premier:** Zhao Ziyang.

Mission in India: Embassy of China, 50-D Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 600328.

COLOMBIA

Cap: Bogota; **Area:** 1,138,400 sq. km.; **Pop:** 28,110,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Pesos. US $ 1 = Pesos.

The Republic of Colombia, situated in the north west of South America, extends up to the Isthmus of Panama, with the Caribbean Sea on the north and the Pacific Ocean on the west. It is bounded on the north east by Venezuela, on the east by Brazil and on the south by Peru and Ecuador. *Bogota,* the capital founded in 1538, is situated in the Andes, 8600 ft. above sea level.

Colombia was once a part of the South American Spanish Empire. In 1819, Simon Bolivar defeated decisively the Spanish forces breaking the hold of Spain. Bolivar's plan to unite New Granada with Venezuela and Ecuador in the Greater Colombia Confederation was fulfilled by the Congress of Angostura (1819), lasting until 1830.

Colombia's main produce is coffee, which accounts for 61.2 per cent of the country's exports. Other products are bananas, fresh flowers, cotton fibre, sugar, rice, tobacco, maize and wheat. The country is the world's leading producer of emeralds and is a substantial producer of platinum and gold. It holds the largest coal reserves in Latin America, rich nickel deposits and natural gas fields.

Industries include textiles, beverages, food products, chemicals and non-metallic minerals.

President: Virgiloo Barco Vargas.

Mission in India: Embassy of Colombia, 82-D, Gr. Fl., Malcha Marg, Chanakyapuri, New Delhi-110 021. Tel: 3012771.

THE COMOROS

Cap: Moroni; **Area:** 2274 sq. km; **Pop:** 443,000 **Lang:** Arabic and Comoran; **Rel:** Muslim and Christian; **Currency:** Franc CFA. French F1 = 50 F CFA.

The Comoro Islands, formerly a French Overseas Territory, lie at the northern end of the Mozambique Channel, between Africa and Madagascar. The archipelago consists of 4 islands—*Grande-Comoroe, Anjouan, Mayotte* and *Moheli*—and a number of islets and coral reefs. The main islands are volcanic and Grande-Comoroe, the largest island is dominated by Mount Karthala (2361 m), ar active volcano. The islands are densel forested.

The population is a mixture of variou strains—Arabs, Africans, Malagasys, Persians, Indians, Indonesians and Europeans African and Arab influences are strongest. purely European population of around 150 completes the scene. Grande-Comoroe i the most populous island and has as capita and principal town, *Moroni.* Agriculture i the mainstay of the economy.

President: Ahmed Abdulla Abderemane, **P.M:** Ali Mroudjae.

THE CONGO

Cap: Brazzaville; **Area:** 342,000; sq. km. **Pop:** 1,695,000; **Lang:** French and Lingala **Rel:** Tribal and Christian; **Currency:** Fran CFA. French F 1 = 50 F CFA.

The People's Rep. of the Congo is bounded on the north by Cameroon and the Central African Republic, on the east an south by Zaire and on the west by the Republic of Gabon and the Atlantic.

Formerly part of the French Equatoria Africa, the Republic of the Congo became autonomous within the French Community i 1958 and fully independent in Aug. 1960. I 1969 a new constitution was promulgated.

Main exports are timber, diamonds, pal oil, crude petroleum, sugar and groundnut

President: Denis Sassou Nguesso; **P.M** Ange-Edouard Poungui.

COSTA RICA

Cap: San Jose; **Area:** 51,100 sq. km.; **Pop** 2,534,000; **Lang;** Spanish; **Rel:** Christian **Currency:** Colone (C) US$ 1 = C 48.20.

The Republic of Costa Rica is a Centra American state. It lies between Nicaragu and Panama. The Caribbean Sea is on the east and the Pacific Ocean on the west.

For nearly three centuries Costa Ric formed part of the Spanish American dominion. In 1821 it became independent.

The country is mainly agricultural. Coffe is the most important product, accounting fo out half the exports. Bananas, cocoa, cattle d recently sugar are the other items of port.

President: Oscar Arias.

CUBA

ıp: Havana; **Area:** 110,922 sq. km.; **Pop:** ,000,000; **Lang:** Spanish; **Rel:** Christian; **ırrency:** Peso. £ 1 = 0.966 Pesos.

Cuba, the largest island in the Greater ntilles group is known as the Pearl of ntilles. Its neighbours are USA, Mexico, maica and Haiti. The Bahama Islands are to e north.

Columbus discovered Cuba in 1492 and ain ruled it for four centuries. In 1898 Cuba ecame an independent republic.

In 1959 Dr. Fidel Castro overthrew Gener- Batista, the dictatorial President and took er power.

Cuba is the largest producer of sugar in e world. Tobacco is the second largest op. Cattle, poultry and fishing have beme important in recent years. Cuba is rich nickel deposits. Copper, chromite and anganese are also found.

President: Dr. Fidel Castro Ruz. **First ice President:** Raul Castro Ruz.

Mission in India: Embassy of the Republic Cuba, D-5, South N.D.S.E., Part II, New elhi-110 049. Tel: 669162.

CYPRUS

ap: Nicosia; **Area:** 9,251 sq. km.; **Pop:** 0,000 (82% and 18% Turks); **Lang:** Greek d Turkish; **Rel:** Greek Orthodox and Mus- n; **Currency:** US $ 1 = Cy. Pound 0.51.

The Republic of Cyprus lies in the North astern corner of the East Mediterranean asin, at the meeting point of three contients — Europe, Asia and Africa. Cyprus ppeared for the first time in the history of vilisation in the 7th millenium B.C. Cyprus ecame independent in 1960. In 1974 it was vaded by Turkey and nearly 40% of its rritory is still under Turkish occupation.

The healthy climate and the natural eauties of the island made it an ideal place r the tourists.

Cyprus is mainly an agricultural island. ain agricultural exports are: potatoes, wine oducts, carrots, fresh vegetables, citrus.

Turkish Cyprus

The Turkish controlled area of northern Cyprus unilaterally declared independence in 1983. It has been named 'Turkish Republic of Northern Cyprus.'

The centre-right and left-of-centre Cypriot coalition Government headed by the Prime Minister-designate Dervis Eroglu, *was officially installed in power in July 1985. The coalition became official when its programme was endorsed by the majority of the newly elected Parliament*

Eroglu, whose National Unity Party is allied with the Communal Liberation Party, received 32 votes for his programme against 16 by the opposition (pro-Moscow) Republican Turkish Party and the Renaissance Party deputies in the 50-strong Parliament elected last June.

Rauf Denktash *is the President of the Republic.*

Main industrial exports are: readymade clothing, footwear, cement, travel goods, plastic products, water pumps, furniture, cosmetics, etc. Other main exports are minerals, the importance of which has been diminishing over the last few years.

President: Spyros Kyprianou.

Mission in India: High Commission of the Republic of Cyprus, 52, Jor Bagh, New Delhi-110 003. Tel: 697503.

Consulate: Bombay—14, K. Dubash Marg, Bombay-400 023. Tel: 244294.

CZECHOSLOVAKIA

Cap: Prague; **Area:** 127,877 sq. km.; **Pop:** 15,588,000; **Lang:** Czech and Slovak; **Rel:** Christian; **Currency:** Koruna (KCs). US $ 1 = 5.89 Kcs.

A socialist republic landlocked in Central Europe, Czechoslovakia lies between Poland, USSR, Hungary, Austria and Germany (West and East). The State is composed of two main population groups, Czechs and Slovaks.

The Czechoslovak Socialist Republic was established in Jan. 1969 as a federal state of two nations of equal rights—the Czechs and the Slovaks. The Czechs and the Slovaks form two republics within the federation.

each with its own government.

Czechoslovakia is a highly industrialized country. Principal exports are machinery and equipment, chemicals and fuels, glass and other manufactured goods. Wheat, barley, potatoes and sugar beet are among the important crops.

President: Gustav Husak. **P.M :** Lubomir Strougal.

Mission in India: Embassy of Czechoslovakia, 50-M Niti Marg, Chanakyapuri, New Delhi-110021. Tel: 608382.

Consulate: Bombay—'Marcopia', 5, Deshmukh Marg.

24 B, Park Street, Calcutta-700 016. Tel: 24-8661.

DENMARK

Cap: Copenhagen; **Area:** 43,074 sq. km.; **Pop:** 5,141,000; **Lang:** Danish; **Rel:** Christian; **Currency:** Krone. US $ 1 = 9 kroner.

Denmark is situated in northern Europe between the North Sea and the Baltic. It comprises the peninsula of Jutland, the islands of Zealand, Funen and Bornholm and 480 smaller islands. Greenland and the Faroe Islands also form part of the Kingdom of Denmark.

Denmark is a constitutional monarchy, the Queen and the Parliament (Folketing) jointly holding legislative powers.

About 70 per cent of the land is under cultivation. Denmark is one of the largest exporters of dairy products. Fisheries form an important occupation. Denmark is famous for its co-operative institutions. The first co-operative society was established in 1866. Shipbuilding, machinery of different types, textiles, iron and steel-ware account for a major portion of industry.

Head of State: Queen Margarethe II. **P.M :** Poul Schluter.

Mission in India: Royal Danish Embassy, 2, Golf Links, New Delhi-110 003. Tel: 616273.

Consulates: Bombay—L&T House, Narotham, Morarjee Marg, Ballard Estate.

Madras: 8, Cathedral Road, Madras-600 086.

Calcutta: McLeod House, 3, Netaji Subhas Road, Calcutta-700 001. Tel: 23-0482.

DJIBOUTI

Cap: Djibouti; **Area:** 21,783 sq. km.; **Pop:** 340,000; **Lang:** Somali and French; **Rel:** Islam; **Currency:** Djibouti Franc. US $ 1 = 198.16 DF

Djibouti, first known as French Somaliland and then as the French Territory of Afars and Issas, became independent on June 26, 1977 under the name of Djibouti.

Lying between Ethiopia and Somalia and looking out on the Red sea and the Gulf of Aden, the state is of extreme strategic importance.

The land is economically poor being mostly volcanic desert. The indigenous population is mostly Muslim. Agriculture is possible only in restricted areas with irrigation facilities. Goats, sheep and camels form the major wealth of the state. Salt is a major product with huge salt deposits in the lakes of Alol and Assal. Trade is almost entirely based on the capital Djibouti.

President: Hassan Gouled Aptidon, **P.M :** Barkat Gourad Hamadore.

DOMINICA

Cap: Roseau; **Area:** 750 sq. km.; **Pop:**74,859; **Lang;** English and French Patois; **Rel:** Christian; **Currency:** US $ 1 = EC$ 2.70.

Commonwealth of Dominica lies in the Lesser Antilles. Once a British protectorate, it assumed the status of a British Associate State in 1967 and became fully independent in 1978.

The island is volcanic in origin and largely mountainous. The population includes Negroes, Mulattoes, Carib Indians and Europeans.

Exports include bananas, cocoa, copra and fruits.

President: Aurelius Marie; **P.M:** Mary Eugenia Charles.

DOMINICAN REPUBLIC

Cap: Santo Domingo: **Area:** 48,422 sq.km. **Pop:** 6101000 **Lang:** Spanish: **Rel:** Christian **Currency:** Peso Oro. US $1 = 1 Peso Oro

The Dominican Republic occupies the eastern two-thirds of Hispaniola, the secon largest island of the Greater Antilles. Hait bounds it on the west, the Atlantic borders i in the north and the Caribbean in the south Originally under Spain, the Dominican Republic became independent in 1844.

The state is predominantly agricultural

e most important crops are sugarcane and ffee.

esident: Dr. Joaquin Balaguer.

ECUADOR

p: Quito; **Area:** 283,561 Sq.km. **Pop:** 90,000; **Lang:** Sapnish and tribal dialects; **l:** Christian; **Currency:** Sucre. US $1 = 75 Sucre.

Ecuador lies on the west coast of South nerica. It is bounded on the north by lombia, on the east and south by Peru and the west by the Pacific Ocean. Two nges of the Andes cross the country from rth to south, dividing it into three natural gions, coastal, highlands and the orient. *ayaquil* is the chief seaport and airport. e *Galapagos Islands* belong to Ecuador. uador, a part of the great Inca Empire, me under Spanish rule in 1533. It became lependent in 1830.

Ecuador is the world's largest producer of nanas. Sugar, African palm, and rice are own. Silver ore is now the chief mineral oduct. There are large deposits of copper, ld and zinc. The production of petroleum is creasing. The so-called 'Panama' hats ade of Toquilla straw are made in Ecuador.

President: Leon Febres Cordero oadeneyra.

Mission in India closed in 1985.

EGYPT

p: Cairo; **Area:** 997,677 sq.km. **Pop:** 56,57,000 **Lang:** Arabic; **Rel:** Muslim and ristian; **Currency:** Pound. US$1 = 1.83 £E.

Egypt, traditionally known as the Gift of the le, occupies north east Africa and is unded by the Gulf of Aqaba, Palestine, ael, Sudan, Libya, the Mediterranean Sea d the Red Sea.

Egypt has one of the oldest civilizations in e world, its recorded history going back to ore than 5000 B.C. In 1922 Egypt became independent monarchy and in 1952 a public.

The main agricultural area is Lower Egypt ich covers the delta of the Nile. The chief ops are cotton, onions, wheat, maize, millet, e, sugarcane and fruits of various kinds.

Principal exports are cotton, rice, mineral oducts, textiles, refrigerators, tyres, cement and electrical instruments.

President: Hosni Mubarak. **PM:** Atef Mohamed Naguib Sedki.

Mission in India. Embassy of the Arab Republic of Egypt, Sunder Nagar, New Delhi-110 003. Tel: 619081.

Consulate: Bombay- Maker Tower 'B', Flat No. 41/B.

EL SALVADOR

Cap: San Salvador; **Area:** 21,393 sq. km.; **Pop:** 53,88,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Colon. US $1 = C 2.50.

El Salavador is bounded on the north-west by Guatemala, on the north and east by Honduras and on the south by the Pacific Ocean. Became independent in 1821.

The country is predominantly agricultural. The principal crop is coffee which provides half the exports. Other products are cotton, maize and sugar. Fisheries are being developed and figure prominently in the export list. Industry is growing.

President: Jose Napoleon Duarte.

EQUATORIAL GUINEA

Cap. Malabo (formerly Santa Isabel); **Area:** 28.051 sq.km; **Pop:** 3,83,000; **Lang:** Spanish and Fang; **Rel:** Christian; **Currency:** Ekuele (plural Bikuele). In 1984 the currency joined the franc zone.

Equatorial Guinea, formerly Spanish Guinea, comprises the islands of *Fernando Poo, Corisco, Great Elobey, Small Elobey and Annobon* and the mainland territory of *Rio Muni* on the west coast of Africa. In 1975, almost all place names were changed by President Macias Nguem. The capital Santa Isabel thus became Malabo.

Francisco Macias Nguema was ousted by his nephew, Mbasogo on Sept. 29, 1979.

The island of Fernando Poo is mostly mountainous. Coffee is cultivated upto 3000 ft. and cocoa upto 2000 ft. There are also forests of ebony, mahogany and oak. Other products are cocoa, coffee, timber, palm oil and bananas.

President: Lt. Col Teodoro Obiang Nguema Mbasogo.

ETHIOPIA

Cap: Addis Ababa; **Area:** 12,21,900 sq km ; **Pop:** 4,20,00,000 **Lang:** Amharic (official language), English; **Rel:** Christian and Islam; **Currency:** Birr US $1 = 2.07 Birr.

Ethiopia is a mountainous country in North East Africa, having access to the Red Sea, through the province of Eritrea, which was federated with Ethiopia in 1952 and later was united with Ethiopia.

Ethiopia is one of the most ancient countries of the world, with a colourful history. The Ethiopian emperors claimed descent from Solomon and the famous Queen of Sheba. The last Emperor of Ethiopia Haile Sellasie I was deposed by the armed forces which took over the govt. in 1974.

The economy is mainly agricultural and pastoral. Coffee export earned 60% of all revenue in 1977. Hides and skins, pulses and oil seeds are also exported. Industry is confined to food processing, manufacture of textiles and goods for local consumption.

Chairman of the Council of Ministers: Lt. Col. Mengistu Haile Mariam.

Mission in India: Embassy of Ethiopia, 7/50-G Satya Marg, Chanakyapuri, New Delhi-110 021. Tel: 692311.

FIJI

Cap: Suva; **Area:** 18,376 Sq.km. **Pop:** 6,74,000. **Lang:** English and Figian. **Rel:** Christian and Hindu. **Currency:** Dollar. US $1 = $F1.20.

Fiji consists of about 800 islands, lying 1100 miles north of New Zealand. The largest of the islands *Viti Levu* constituting more than half of the total land are of Fiji islands is the seat of the capital, *Suva*. Fiji lies on the main route between Australia, New Zealand and North America and is the centre of communications in the South West Pacific.

These islands came under British rule in 1874. From 1879, indentured Indian labour was imported into the islands to work on European sugar plantations. Practically all the Indian workers settled permanently in the islands. Their descendants now form 50 per cent of the population. Melanesians, the original inhabitants, make up 43 per cent, the rest being made up of Europeans, Chinese and others. On Oct, 10, 1970 Britain granted independence to Fiji.

Fiji is a famous tourist centre. Its major products are agricultural. Sugar and coconuts form 90 per cent of the total exports. Mining is limited and industries are few.

Head of State: Queen Elizabeth II represented by **Gov. Gen:** Ratu Sir Penaia Ganifau. **P.M:** Ratu Sir Kamisese K.T. Mara.

FINLAND

Cap: Helsinki: **Area:** 337,032 sq.km. **Pop:** 48,59,000. **Lang:** Finnish and Swedish; **Rel:** Christian: **Currency:** Mark. US $1 = 7.10 Marks.

The Republic of Finland is bordered on the north by Norway, on the west by Sweden and the Gulf of Bothnia, on the south by the Gulf of Finland and on the east by the USSR.

Finland is a Baltic State, which once formed part of the Russian Empire. It became an independent republic in 1917.

Finland's economy is based on conifer forests which cover 65 per cent of the land. Paper and pulp industry is highly developed. Other industries are shipbuilding, metals, textiles, leather and chemicals. Finland has a fairly big fleet of merchant marine with a gross tonnage of 1,649,687 (1985).

President: Mauno Koivisto, **P.M:** Kalevi Sorsa.

Mission in India: Embassy of Finland, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 605409.

Consulates: Bombay- Bennet, Coleman & Co., Dr. D.N. Road.

Calcutta: Calland House, 6th Floor, Chitrakoot, 230 A, Acharya Jagdish Chandra Road, Calcutta-700 020. Tel: 44-4757.

Madras: C/o Travancore Rayon Ltd., 762 Mount Road, P.O. Box 2730, Madras-600 002.

FRANCE

Cap: Paris; **Area:** 551,695 sq.km. **Pop:** 54.7 million. **Lang:** French: **Rel:** Christian. **Currency:** Franc. US$1 = 6.73 Francs.

France, the largest country in western Europe, lies between three big countries-Spain, Germany and Italy and the lesser states of Switzerland, Belgium and Luxembourg. The North Atlantic Ocean (Bay of Biscay) lies to the west and the English Channel to the north, while the Mediterranean Sea bounds the south. The island of Corsica-the birthplace of Napoleon –forms an intergral part of France.

Once a grand monarchy, the French Relution (1789-1793) made France a republic. nce then republican and imperial forms of vernment followed one after another until e Fifth Republic and the French Commun- ' came into being in 1958 under President harles de Gaulle.

The country is self-sufficient in agricultural roduction and exports large quantities of gricultural products to other countries. mong manufactured products, the most nportant are chemicals, silk, cotton textiles, utomobiles, aircraft, ships, precision instru- ients, electronic equipments, perfumes and nnes. Over the last 20 years urban develop- ient and technological progress have pro- oundly changed French people's everyday fe.

President: Francois Mitterrand. **P.M.:** acques Chirac.

Mission in India: Embassy of France, 2/50 , Shantipath, Chanakyapuri, New Delhi- 10 021. Tel: 677471.

Consulates: Bombay - 'Datta Prasad' Bldg., econd Floor, Nowroji Gamadia Cross Road, ombay-400 026.

Calcutta: 23/6, Park Mansions, Calcutta- 00 016. Tel: 29-0978.

Madras: Hon. Consul, VDS House, 26 athedral Road, Madras-600 086. Tel: 473177.

Pondicherry: Rue de la Marine, Pon- icherry-605 001.

GABON

ap: Libreville; **Area:** 267,000 Sq.km. **Pop** 1,46,000. **Lang:** French and Bantu dialects **el:** Christian and Tribal; **Currency:** Franc FA. French F1 = 50 F CFA)

The Gabon Republic, situated on the vestern coast of Africa, is bounded by quatorial Guinea, Cameroon, the Congo epublic and the Atlantic Ocean. Formerly a rovince of French Equatorial Africa, Gabon ttained independence on Aug. 17, 1960.

The economy, hitherto largely dependent n forestry, is now dominated by mining. The nanganese deposit at Moanda in the south is ne of the world's richest deposits. Crude oil roduction is already the fifth highest in frica. Uranium, gold and iron ore are also nined

President: Albert-Bernard (Omar) Bongo, **.M:** Leone Mebiame.

THE GAMBIA

Cap: Bathurst; **Area:** 11,295 sq.km.; **Pop:** 6,30,000; **Lang:** English and Mandinka; **Rel:** Musilm and Christian. **Currency:** Dalasi– US $1 = 4.74 Dalasi.

The Gambia is a narrow strip of land in West Africa, extending inland from the Atlantic Ocean for about 30 miles on either side of the Gambia River and surrounded on three sides by Senegal. Nearly half the inhabitants belong to the Mandingo tribe.

Formerly a British colony and protectorate. Gambia became an independent state within the Commonwealth on Feb. 18, 1965 and a Republic in April 1970.

Peanuts are the main crop, along with rice and palm kernels. Textiles, food and manufactured goods are significant items of import.

President: Sir Dawda Kairaba Jawara.

GERMANY (East)

Cap: Berlin: **Area:** 108,179 sq.km. **Pop:** 1,66,58,000. **Lang:** German; **Religion:** Christian; **Currency:** Mark. US $1 = 3.43 M.

The German Democratic Republic (East Germany) is bounded on the north by the Baltic Sea, west, south-west and south by West Germany, south east by Czechoslovakia and east by Poland along the line of the rivers Oder and Neisse.

When Germany surrendered to the Allies in 1945 the country was divided into four zones of Allied occupation. The northern section of East Prussia with about 14 per cent of the population and 24 per cent of the area of the former Reich came under Russian occupation. The area under Russian occupation was constituted into the independent socialist state of the German Democratic Republic on October 7, 1949.

Important crops of East Germany are wheat, rye, barley, oats and potatoes. Farming is organised on state-sponsored cooperative basis. The only natural power source is lignite (brown coal) which supplies 90 per cent of the basic energy. Industries are highly developed-machines, chemicals, heavy engineering and shipbuilding. Special stress is laid on quality products like optics, electronics and precision tools. The Leipzig trade fairs are well known throughout the world.

Chairman of the Council of State: Erich Honecker.

Mission in India: Embassy of Germany, 2 Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 3014204.

GERMANY (West)

Cap: Bonn: **Area:** 248.625 sq.km. **Pop:** 6,12,14,000. **Lang:** German. **Rel:** Christian; **Currency:** Deutsche Mark. US $1 = 3.43 DM.

The Federal Republic of Germany lies in the heart of Europe. Its neighbours to the west are the Netherlands, Belgium, Luxembourg, and France, to the south Switzerland and Austria, to the east Czechoslovakia and East Germany and to the north Denmark.

It was Bismarck, Chancellor of Prussia, who laid the foundation of the German Empire in 1871. After the defeat of Germany in the Second World War the erstwhile German territory was divided into two occupation areas, Russia occupying East Germany and USA, Britain and France occupying West Germany. The city of Berlin was also divided into West Berlin (USA, Britain and France) and East Berlin (Russia), West Germany came into being on May 23, 1949. The German Federal Republic consists of 10 states (Lander). West Berlin is also a state of the Federal Republic.

West Germany showed phenomental economic growth during post-war years in industrial production, notably in iron and steel, vehicles, engineering, ship-building, electrical goods and chemicals. Since the currency reform in 1949 the economy of W. Germany has grown prodigiously.

Federal President: Richard Von Weizsaecker. **Federal Chancellor:** Helmut Kohl.

Mission in India: Embassy of Federal Republic of Germany, 6 Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 604861.

Consulates: Bombay- Hoechst House, 10th Floor, Nariman Point;

Calcutta: Hastinigs Park Road, Calcutta-700 027. Tel: 45-9141.

Madras: Consulate General of FRG, 22, C.I.C. Road, PB 6801, Madras-600 105. Tel: 471747.

GHANA

Cap: Accra; **Area:** 2,38,537 sq.km.; **Pop:** 1,22,05,574; **Lang:** English (official language) and eight major national languages; **Rel:** Christian and Muslim: **Currency:** Cedi. US $1=C90.

Ghana, named after an ancient state along the river Niger between 4th and 10th centuries is composed of the former British Gold Coast colony and the British-ruled Togoland in Western Africa.

Ghana got independence on 6th March 1957 and became an independent republic within the Commonwealth on July 1, 1960.

Ghana is primarily an agricultural country and producer of best quality cocoa which constitutes a major export item. Other cash crops include kolanuts, palm products, bananas, coffee, shea-nuts and rubber. It also exports timber, gold, diamonds, manganese and bauxite.

Provisional National Defence Council Chairman and Head of State: Flt. Lt. Jerry J. Rawlings.

Mission in India: High Commission of Ghana, A-42, Vasant Marg, Vasant Vihar, New Delhi-110 057. Tel: 670788.

GREECE

Cap: Athens; **Area:** 131,990 sq. km.; **Pop:** 9884000; **Lang:** Modern Greek; **Rel:** Christian. **Currency:** Drachami. US $1=143.73.

Greece or the Hellenic Republic occupies the southern part of the Balkan peninsula in the Mediterranean with the Ionian Sea on the west and the Aegean Sea on the east. Albania, Yugoslavia and Bulgaria lie to the north of Greece, and Turkey to the east.

In ancient times, Greece was the seat of democracy, learning and culture. Politically independent till the first century B.C., the Greek states succumbed to Roman might in the latter half of the first century B.C. Later they came under the Byzantine and Ottoman empires in succession until 1830 when Greece regained its freedom as a monarchic state. After many vicissitudes of fortune monarchy was abolished in Greece in 1974. It has been a republic since.

Greece having been till recently an agricultural country has now developed many industrial branches. In merchant shipping, reece owns a surprisingly big tonnage. ourism is Greece's biggest industry.

President: Christos Sartzetakis. **PM:** ndreas Papendreou.

Mission in India: Embassy of Greece, 16 under Nagar, New Delhi- 110 003. Tel: 17800.

Consulate: General: C/o. Sttewarts and loyds of India Ltd., 41 Chowringhee Road, alcutta-700 071. Tel: 24-8194.

Hon. Consul: Chordia Mansion, 739 Anna-alai, Madras-600 002. Tel: 811566.

GRENADA

ap: St. George's; **Area:** 344 sq.km.; **Pop:** ,15,000; **Lang:** English and French-African atois; **Rel:** Christian; **Currency:** Eastern aribbean. $. US $1=EC $2.70.

Grenada is the southernmost of British Vindward Islands and includes *Southern renadines* (islands), the largest of which is *arriacou*. It is a heavily wooded country vith mountains of volcanic origin stretching rom north to south. Grenada became indeendent in 1974.

The population is of mixed origin. Euroean, Negro and Carib Indians.

Tourism is a growing industry but agriculure dominates the economy. The chief xports are cocoa, nutmegs and bananas. ther crops include coconuts, citrus fruits, ugar cane, cotton and spices.

Gov. Gen. Sir Paul Scoon **PM:** Herbert laize.

GUATEMALA

ap: Guatemala City; **Area:** 1,01,889 sq.km. **op:** 81,65,000; **Lang:** Spanish (offical) and ndian dialects; **Rel:** Christian; **Currency:** uetzal US $1=Q1.

A republic of central America, Guatemala bounded by Mexico, Belize, Honduras, l-Salvador, the Caribbean Sea and the acific Ocean.

Guatemala is the third largest of the five entral American states and has the largest opulation. Fifty per cent of the population is f Indian (Red) extraction, 45 per cent Ladino r of mixed European and Indian parentage he Indians are the descendants of the uilders of the great Maya civilization which vas wiped out by the Spanish conquisitaors.

Shun Oslo, Hug Athens!

Guess which is the most expensive city in the world — New York, Paris, Geneva or Amsterdam?

No, none of them. The distinction goes to Oslo, capital of Norway, according to 'Business International' magazine.

Oslo is more expensive than Helsinki, the closest rival, New York, Geneva and Zurich. London ranks alongside Amsterdam, Kuala Lumpur and Panama in terms of executive living cost.

Business International's index is based on an executive's shopping basket, including food items, drinks, household appliances and supplies, clothing and entertainment.

Meanwhile, the magazine has picked Athens as the cheapest tourist city in Europe, despite an inflation rate of 23 per cent last year.

After remaining as a Spanish colony for about three centuries. Guatemala became a republic in 1939. Guatemala's claims to British Honduras (Belize) led to the rupture of diplomatic relations with Britain in 1963.

The soil is very fertile. Agriculture is the most important occupation. The principal crop is coffee. Other important export items are bananas, cotton, gum, sugar, maize, tobacco, fruits and beef.

President: Vinicio Cerezo.

GUINEA

Cap: Conakry; **Area:** 2,45,857 sq.km: **Pop:** 53,01,000; **Lang:** French and 8 national languages; **Rel:** Islam and Tribal; **Currency:** Syli. US $1=26 Sylis.

Guinea, a former French overseas territory in West Africa, is bounded by Guinea-Bissau, Senegal, Mali, the Ivory Coast, Liberia and Sierra Leone.

Under the constitution of the Fifth (French) Republic, Guinea voted for secession and proclaimed itself an independent republic on October 2, 1958

It exports coffee, honey, bananas, palm kernels, iron and aluminium ore. Guinea has probably the world's largest deposit of bauxite.

President: Col. Lansana Konte. **P.M:** Col. Diarra Traore.

GUINEA-BISSAU

Cap: Bissau; **Area:** 36,125 sq.km. **Pop:** 8,44,000; **Lang:** Crioulo (Cape Verde-Guniea dialect) and Portuguese; **Rel:** Islam, Christian and Tribal; **Currency:** Peso. US $1=88.53 Pesos.

Guinea-Bissau, formerly Portuguese Guinea, is stuck like a wedge between Senegal in the north and Guinea to the east and south. The Atlantic sea borders it on the west. The land is part plain and part plateau.

The main occupation is agriculture. Swamp rice (grown in the coastal plains), coconuts, cassava, sweet potatoes and maize form the important food crops. The cash crops are groundnuts, coconuts and palm oil. Cattle raising is widespread.

Guinea-Bissau unilaterally declared independence in 1973. Portugal recognised its independence in 1974.

President: Maj. Joao Barnardo Vieira.

GUYANA

Cap: Georgetown; **Area:** 2,14,969 sq.km. **Pop:** 9,36,000; **Lang:** English; **Rel:** Christian, Hindu and Muslim; **Currency:** Dollar. US $1=4.15 G$.

Guyana (former British Guiana) lies on the north east coast of South America. It is bounded on the east by Suriname, on the west by Brazil and Venezuela; and on the south by Brazil.

Guyana became a British possession in 1814 and an independent sovereign state within the Commonwealth of Nations on May 26, 1966.

The economy is based on agriculture. Sugar, rice and bauxite are the main exports. There are considerable deposits of gold and diamonds. Dense tropical forests cover much of the land.

President: Desmond Hoyle; **P.M:** Hamilton Greene.

Mission in India: High Commission of Guyana, 85 Poorvi Marg, Vasant Vihar, New Delhi-110 057. Tel: 674194/5.

HAITI

Cap: Port-au-Prince; **Area:** 27,750 sq. km.; **Pop:** 6419000; **Lang:** French (official), a Creole dialect is generally spoken; **Rel:** Christian and Voodoo; **Currency:** Gourde. US $1=5 Gourdes.

Haiti is part of the West Indies known as Hispaniola in the Atlantic lying between Cuba on the west and Puerto Rico on the east. Negroes form the majority of the population, the rest being mulattoes descended from former French settlers and slaves. The French colony proclaimed itself an independent republic in 1804.

Coffee is the chief agricultural product, others being sisal, cotton; raw sugar, cocoa and tobacco. Rice is grown for home consumption. Rum and other spirits are disitlled from molasses and exported. Bauxite is the chief mineral exported. Tourism is Haiti's second largest source of foreign exchange.

President: Six-man military council took over government after the ouster of Jean Claude Duvalier in February 8, 1986.

Mission in India: Consulate of Haiti, 186 Sarat Bose Road, Calcutta-700 029. Tel: 46-1164.

HONDURAS

Cap: Tegucigalpa, D.C.; **Area:** 112,088 sq. km.; **Pop:** 4232000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Lempira also known as Peso. US $1=2 Lempiras.

Honduras is a republic of Central America lying between Nicaragua, El Salvador and Guatemala. It has a long northern coastline on the Caribbean and a narrow southern outlet to the Pacific.

Originally a Spanish colony, Honduras became independent in 1821. The country has gone through a series of dictatorships, military juntas, coups and counter-coups.

The chief crop is bananas which constitute 65 per cent of the country's exports. Coffee, cotton, maize and tobacco are also grown. Timber is abundant and cattle raising is a major occupation.

President: Roberto Suazo Cordova.

HONG KONG

Cap: Victoria, **Area:** 1051.7 sq. km.; **Pop:** 5498000; **Lang:** English and Cantonese; **Rel:** Confucianism and Buddhism; **Currency:** Hongkong Dollar. US $1=HK$ 7.80.

Lying along the south east coast of China, he mouth of the Canton river, Hong Kong mprises Hong Kong island, Kowloon ninsula, the New Territories and over 230 all islands. Hong Kong has been a British lony since 1843. The New Territories were quired by Britain in 1898 by lease for 99 ars. According to an agreement signed on Dec. 1984, China would recover vereignty over Hong Kong from 1 July 1997 d establish it as a Special Administrative gion.

The population is almost entirely Chinese th a sprinkling of other nationalities.

Hong Kong is one of the world's greatest nshipment ports. It specialises in light dustries—cotton textile, plastics, electroc, photographic and optical equipments c.

Gov. Gen: Sir Eduard Youde, **Chief cretary:** David Akers-Jones.

HUNGARY

p: Budapest; **Area:** 93,033 sq. km.; **Pop:** 786000; **Lang:** Hungarian, Magyar; **Rel:** ristian; **Currency:** Forint, US $1=52.73 rints.

Hungary, a socialist country in Central rope, lies between Czechoslovakia, goslavia, the USSR, Romania and Austria. e eastern half of Hungary is mainly a great rtile plain, 'the Great Plain'. The west and e north are hilly.

Hungary had a stormy history being sucessively overrun by Huns, Magyars, Turks, ngarians and Austrians. Hungary became independent republic in 1918 and the ngarian Socialist Republic in 1919.

Although an agricultural country in the st, industry has come to account for more an half of its total economy since the cond World War. Hungary exports enneering producfs, machine tools, motor hicles and electrical and electronic goods. ief imports are iron ore, coal, crude oil d consumer goods. More than 97 per cent agricultural land is collectivised. neyards occupy around 186,000 hectares.

Chairman of the Persidential Council: l Losonczi, **PM:** Gyorgy Lazar.

Mission in India: Embassy of Hungary, 50, Niti Marg, Chanakyapuri, New Delhi-0 021. Tel: 371152.

New Status For Hong Kongees

Britain's House of Commons in May last overwhelmingly approved the Government's proposed package of nationality rights for Hong Kong's 2.5 million British passport holders, due to take effect when the colony reverts to China in 1997.

The package, presented by the Home Secretary, Mr. Douglas Hurd, and approved by a 176-vote majority, provides for a new "British National Overseas" status for Hong Kong's British Dependent Territory Citizens.

The status will be valid for two generations and grants holders the right to visit Britain while continuing to live in Hong Kong. Mr. Hurd stood by his refusal to grant U.K. residence rights to Asian non-ethnic Chinese now carrying BDTC passports but who fear rejection by the Chinese Government when it takes power.

ICELAND

Cap: Reykjavik; **Area:** 102,846 sq. km.; **Pop:** 239000; **Lang:** Icelandic; **Rel:** Christian; **Currency:** Krona US $1=Kr. 42.92.

Iceland is an island close to the Arctic Circle in North Atlantic. The Norwegian Sea is on the eastern side of Iceland. The warm Gulf Stream makes the winters mild. During the short cool summers, there is perpetual daylight for many weeks—making it an *island of the Midnight Sun*. The island has many geysers and hot springs. Natural hot water from Iceland's hot springs is pumped into towns, providing heat for offices and residences. Iceland has over 200 volcanoes, many of them still active..

The pepople of Iceland are the descendants of the dare-devil Vikings of Norway, the first of whom settled in Iceland in A.D. 874 and who are reputed to have first discovered Greenland (A.D. 982) and North America (A.D 1000) After having been independent till the 13th century it became part of Norway, and passed under Danish rule. In 1941 the Althing (Parliament) voted for complete independence and a republic was formed on June 17, 1944.

Much of the land in Iceland is uncultivated. Potatoes and turnips are the major crops. Fishing industry is highly developed and forms the mainstay of Iceland's economy.

President: Vigdis Finn Bogadottir.

Mission in India: Embassy of Iceland, D-35, Pamposh Enclave, New Delhi.

Consulate: Bombay— 38, Western India House, Sir. P.M. Road.

INDIA

(See Part III)

INDONESIA

Cap: Jakarta; **Area:** 1,904,569 sq. km.; **Pop:** 165,153,600; **Lang:** Bahasa Indonesian; **Rel:** Islam; **Currency:** Rupiah. US $1 = 1097 Rupiahs.

Indonesia is an archipelago state consisting of over 13,000 (6000 inhabited) islands. The five main islands are Java, Sumatra, Kalimantan (Indonesian Borneo), Sulavesi and Irian Jaya (West New Guinea) with 30 smaller archipelagoes. The capital is Jakarta, the former city of Batavia, on the island of Java. The country is divided into 27 provinces.

The Japanese army occupied Indonesia from 1942 till 1945 after the surrender of the Dutch army. The Indonesian people proclaimed their independence on August 17, 1945. After a war of independence, the Netherlands transferred the sovereignty to Indonesia on December 27, 1949.

One of the world's richest countries in natural resources, Indonesia has vast supplies of tin, oil and fairly big deposits of bauxite, copper, nickel, gold and silver. Agriculture ,is the main occupation of the people. Crops include rice, tobacco, coffee, rubber, pepper, kapok, coconut, palm oil, tea and sugarcane. Forest products are a major source of foreign exchange.

President: Gen. Soeharto.

Mission in India: Embassy of Indonesia, 50-A, Chanakyapuri, New Delhi- 110021. Tel: 602352.

Consulate: Bombay— Lincoln Annexe, 17, Altamount Road, Cumballa Hill.

Calcutta: Rajkamal Bhavan, 128 Rashbehari Ave, Calcutta-700 029. Tel: 46-8297.

IRAN

Cap: Teheran; **Area:** 1,648,000 sq. km.; **Pop:** 43799000; **Lang:** Persian (Fársi) **Rel** Islam; **Currency:** Rial. US $1=97.21 Rial.

Iran (Persia) is surrounded by Iraq an Turkey in the west, USSR in the north Afghanistan and Pakistan in the east an Persian Gulf in the south west. The southern coast of the Caspian Sea lies to the north c the country. The Iranians are Aryans.

It is a country of great antiquity, celebrate alike for its culture and military valour.

The last of the Pahlavi dynasty, Mohammed Reza, was forced to flee Iran in face c nation-wide revolt against him. In Feb. 197 Ayatollah Khomeini, a highpriest of Islam returned to Iran to guide its destiny.

Agriculture is the major occupation of th people. The chief agricultural products ar wheat, barley, rice, fruits, wool and suga beets. Sturgeon fish (from which caviar obtained) in Caspian Sea provides an impor tant source of income. Iran is one of th biggest oil producing regions in the Middl East. Emeralds and other gems are found Khorassan and Kerman. Persian carpet made on handlooms are famous the worl over.

President: Ayatollah Hojatoleslam A Khamenei.

Mission in India: Embassy of the Islami Republic of Iran, 5, Barakhamba Road, Ne Delhi- 110001. Tel: 385491.

IRAQ

Cap: Baghdad; **Area:** 438446 sq. km; **Pop** 15158000; **Lang:** Arabic (official) and Ku dish; **Rel:** Islam; **Currency:** Iraqi Dina US $1=0.311 Dinar.

Iraq is the modern name for Mesopotami (Meso - middle, Potamia- rivers), the lan lying between the two great rivers, Eup hrates and Tigris. It is surrounded by Iran o the east, Saudi Arabia, Kuwait and th Arabian (Persian) Gulf on the South, Jorda and Syria on the west and Turkey on th north.

Iraq is one of the most ancient countries the world and has produced a culture—th Mesopotamian Civilisation —which has infl enced European and Asian civilisations.

Petroleum is the most important sector the economy. Iraq occupies the fifth plac among oil-producing countries of the worl A programme of industrialisation is on wi oil revenues. Three quarters of the ulation depend on agriculture for their g. Iraq is the world's largest exporter of es.

resident: Sadam Hussein Takriti.

lission in India: Embassy of Iraq, 169/170/ Jor Bagh, New Delhi 110003. Tel: 618011.

onsulate: Bombay — Panorama, 203, lkeshwar Road.

IRELAND

ap: Dublin; **Area:** 70,282 sq. km; **Pop:** 5000; **Lang:** Irish and English; **Rel:** istian; **Currency:** Irish Pound. US $1=1R£ .

reland or Eire, the Emerald Isle, is an nd in the N. Atlantic lying west of Great ain.

he independent state of Ireland consists nly 26 counties out of the 32 that make up whole island. The 6 remaining counties n the area known as Northern Ireland ch is directly administered by the United gdom.

reland emerges into history with the ning of St. Patrick in 432 A.D. and the ead of Christianity. An invasion led by man barons during the 12th century led period of almost eight centuries of British in Ireland. In 1921 Great Britian recog- ed Ireland as a more or less independent within the Commonwealth and the coun- became known as the Irish Free State. In 2 the Fianna Fail party under Eamon de era came to power and gradually re- ved the last vestiges of allegiance to the ish Crown. In 1937 a new constitution was pted which made Ireland effectively a ublic. In 1949 Ireland formally declared lf a Republic and ceased to be a member he Commonwealth. In 1973 the country ed the EEC.

reland had formerly a mainly agricultural nomy. However, in recent decades in- trial output has expanded rapidly due to reased foreign investment. Exports make 50% of GNP, the main items being dairy ducts, food and beverges, machinery and animals.

resident: Patrick John Hillery; **PM:** Dr. ret Fitzgerald.

lission in India: Embassy of Ireland, 13 Bagh, New Delhi- 110 003. Tel: 617435.

Consulate: Bombay — Royal Bombay Yacht Club Chambers, Apollo Bunder, Bombay-400 039.

ISRAEL

Cap: Jerusalem; **Area:** 20,325 sq. km; **Pop:** 4216000; **Lang:** Hebrew (official) and Arabic; **Rel:** Judaism; **Currency:** Shekel. US $1=783 Shekel.

A republic of the Middle East (West Asia), Israel is surrounded on three sides by Arab countries. On the north is Lebanon, on the east Syria and Jordan and on the south Egypt. The Mediterranean Sea lies to the west.

The republic occupies the minor portion of ancient Palestine.

On November 29, 1947, the UN partitioned Palestine between the Jews and the Arabs. A new Zionist state called Israel was proclaimed in the Jewish area of Palestine on May 15, 1948.

Israel has developed both agriculture and industry in the little land allotted to it with considerable expertise and efficiency. They have literally made the deserts bloom. Kibbutzim (collective cultivation), irrigation schemes and reclamation of desert-land formed the main features of agricultural development. Citrus fruits are the main exports. Wine-making is an extensive industry. In diamond-cutting, Israel comes next only to Belgium. The Valley of Jordan and the Dead Sea yield rock salt, sulphur and potash.

President: Chaim Herzog, **P.M:** Yitzhak Shamir.

ITALY

Cap: Rome; **Area:** 301,253 sq. km; **Pop:** 56724000; **Lang:** Italian; **Rel:** Christian; **Currency:** Lira US $1=1500.

The Italian Republic occupies the long peninsular area in Europe extending from the Alps into the Mediterranean Sea. The peninsula is bounded by the Mediterranean on 3 sides. France bounds it on the north-west; Switzerland and Austria on the north and Yugoslavia on the north-east. The islands of Sicily, Sardinia, Elba and Capri in the Mediterranean belong to Itally.

Italy, once the headquarters of the great Roman Empire, disintegrated into many petty states during the later Middle Ages. Modern Italy began to develop when King

Victor Emmanuel II of Savoia became King. The Vatican was recognised as an independent state on February 11, 1929. On April 28, 1945 Mussolini the Fascist dictator was put to to death. Consequent on a referendum on June 2, 1946, Italy voted for a republic. The King laid down his kingship.

Since World War II, Italy has revolutionised agricultural production. The chief crops are grapes, wheat, sugarbeet, fruit and vegetables. Italy is among the highly industrialised countries of the world. Its main products are electrical, mechanical and electronic gadgets, automobiles and chemicals. Italy has a big merchant marine fleet with a gross tonnage of over 11 million, and air fleet with the capacity of over 12 billion passengers/km and over 1 billion tons/km.

President: Francesco Cossiga, **P.M:** Bettino Craxi.
Mission in India: Embassy of Italy, 13, Golf Links, New Delhi- 110 003. Tel: 618311.

Consulates: Bombay— Consulate General of Italy, Vaswani Mansion, 120, Dinsha Wachha Road.

Calcutta: 3, Raja Santosh Road, Calcutta-700 027. Tel: 45-1411.

Madras: 5th Floor, Sudarshan Bldg. No. 86, Chamiers Road.

IVORY COAST

Cap: Abidjan; **Area:** 322,462 sq. km; **Pop:** 9474000; **Lang:** French (official) and Tribal; **Rel:** Muslim and Christian; **Currency:** Franc CFA. US$1=523.75 F CFA.

The Ivory Coast is bordered by Mali and Burkina Faso in the north, Ghana in the east, the Gulf of Guinea in the south, and Liberia and Guinea in the west.

The Republic of Ivory Coast, once an overseas territory of France, became independent in August 1960.

Agriculture, forestry and fishing employ 90 per cent of the population. Ivory Coast is the third most important coffee producer in the world and the most important African producer of timber. Cocoa, bananas and pineapples are the other important cash crops.

President: Felix Houphouet-Boigny.

JAMAICA

Cap: Kingston; **Area:** 10,991 sq. km; **Pop:** 2290000, **Lang:** English; **Rel:** Christian; **Currency:** Dollar US $1=J $ 5.17.

Jamaica, an island in the Greater Antilles group of the West Indies, is situated in the Caribbean Sea, 144 km. south of Cuba. The climate varies with altitude, being tropical at sea-level and temperate in the mountain area.

Jamaica was visited by Columbus in 1494 and ruled by Spain till 1655 when Britain occupied it. In 1962 Jamaica became fully independent as a member of the Commonwealth.

Agriculture, mining and tourism form the backbone of the economy. The dominant crop is sugar, with molasses and rum as important by-products. Bananas, citrus fruits and coconuts are also grown. Jamaica is the world's second largest producer of bauxite and alumina. Other industries are cement, tobacco and consumer goods.

Head of State: Queen Elizabeth II. **Gov. Gen:** Florizel Augustus Glasspole. **P.M:** Edward Seaga.

JAPAN

Cap: Tokyo, **Area:** 377,765 sq. km; **Pop:** 121,000,000; **Lang:** Japanese; **Rel:** Shinto and Buddhist; **Currency:** Yen. US $1=261.77 Yen.

Japan consists of four main islands, Honshu (Mainland), Hokkaido, Kyushu and Shikoku and a number of smaller islands of which Okinawa is one. Japan is separated from the Soviet Union and Korea by the Sea of Japan and from China by the East China Sea. Japan has a deeply indented coastline measuring 16,654 miles. Most important ports are Yokohama, Kobe, Nagoya and Osaka.

Main Islands of Japan

Name	**Area (sq. km)**	**Major city**
Honshu	22,414	Tokyo
Hokkaido	78,073	Sapporo
Kyushu	36,555	Kitakyushu
Shikoku	18,257	Matsuyama

Legend has it that the Japanese Empire was founded by Emperor Jimmu in 660 B.C However, there was no centralised authority till A.D. 1868 when Emperor Meiji united the whole of Japan under his rule. Japan had little trade relations with foreign countries unti Commodore Perry of USA in 1854 persuaded

Japanese to enter into a trade treaty with A. In 1889 Japan had her first constitution. ian's victory in the Russo-Japanese War of)4-05 raised her prestige among European wers.

Rice, the staple food of Japan, is cultivated half the area of arable land. Other crops e wheat, barley, potatoes and tobacco. cept for limestone and sulphur, Japan is or in minerals and Japanese industry is avily dependent on imported raw mate- ls and fuels. Japan is one of the most lustrially advanced countries of the world. e principal industries are motor vehicles, n and steel, chemicals, textiles (cotton, ol, silk and synthetics),fishing, ceramics, ecision instruments, fertilizers, machinery d shipbuilding. Japan has evolved an tensive fishing industry.

Head of State: Emperor Hirohito, **P.M:** suhiro Nakasone.

Mission in India: Embassy of Japan, Plot . 4 & 5, 50G Shantipath, Chanakyapuri, ew Delhi- 110 021. Tel: 604071.

Consulate: Bombay— Babasaheb Dahanu- r Marg, Cumbala Hill, Bombay-400 026.

Calcutta: 12, Pretoria Street, Calcutta- 0 071. Tel: 44-2241.

Madras: 60 Spur Tank Road, Chetput, adras-600 031. Tel: 665594.

JORDAN

Cap: Amman; **Area:** 97,740 sq. km; **Pop:** 75000; **Lang:** Arabic; **Rel:** Islam; **Curren- :** Dinar. US $1=JD 0.360.

A constitutional monarchy in south-west ia, Jordan is bounded in the north by Syria, rth east by Iraq, east and south by Saudi abia and west by Israel.

Jordan was popularly known as Trans- dan till 1949, when the popular name was anged to the Hashemite Kingdom of Jor- n. The population is chiefly Arab of whom e majority are Muslims. In 1946, Jordan came an independent state.

Jordan is largely a desert area, but the stern portion is fertile and produces citrus its, wheat, barley, lentils, and water elons. Phosphates make up the country's st important export item, but tourism mains its main foreign exchange earner

Head of State: King Hussein Ibn Talal **M:** Zaid Rifai.

Japan Autoking

Japan continues to be the number one automaker in the world. An almost uninterrupted flow of new car models on the domestic market boosted total auto output in 1985 to an all-time high of more than 12 million units.

In the first 10 months of 1986, Japanese automakers turned out 10,194,600 units, up 6.8 per cent from a year ago.

With that period's growth rate converted to annual figures, this output corresponds to 12,110,000 units, even if it is assumed that output in the last two months of the year remains the same as a year ago, officials said.

Ranking second in the world, U.S. automakers produced 9,910,800 units in the year's first ten months, 280,000 units behind their Japanese counterparts.

They ascribed the rise in output to brisk demand for Japanese autos at home and abroad, noting conspicuous increases in the diversion of passenger cars to the U.S. and trucks to China.

Mission in India: Embassy of Jordan, 35, Malcha Marg, Chanakyapuri, New Delhi-110 021. Tel: 3013495.

KAMPUCHEA

Cap: Phnom-Penh; **Area:** 181,035 sq. km; **Pop:** 7149000; **Lang:** Khmer; **Rel:** Theravada Buddhism; **Currency:** Riel.

The Peoples Republic of Kampuchea was originally called *Cambodia* and for some time— between Oct. 1970 and May 1975—was known as Khmer Republic. It is a south-east Asian state bounded by Thailand and Laos on the north, by Vietnam on the east and south and by the Gulf of Siam on the south and west. Democratic Kampuchea represents the last remains of the great Khmer Empire.

Kampuchea is an undeveloped country with 50 per cent of its land covered by virgin forests. Rice occupies 80 per cent of the cultivated area. Cattle rearing and fishing are fairly well developed. The forests are rich in valuable timber. Iron, copper, manganese and gold are also found.

President: Heng Samrin, **P.M:** Hunsen

Mission in India: Embassy of the People's Republic of Kampuchea, E 23, Defence Colony, New Delhi-110 024. Tel: 693417.

KENYA

Cap :Nairobi; **Area:** 582,646 sq. km; **Pop:** 19761000; **Lang:** National - Kiswahili; official - English; **Rel:** Tribal and Christian and Islam; **Currency:** Shilling. US $1=16.2 Shilling.

The Republic of Kenya is bordered on the north by Sudan and Ethiopia, east by Somalia and the Indian Ocean, south by Tanzania and west by Uganda.

Formerly a British colony, Kenya became an independent republic within the Commonwealth in 1964.

Kenya's prosperity rests largely on agricultural products. The chief cash crops are coffee, tea, sisal, cereals, wattle, and pyrethrum. Kenya is one of the few African countries with an important dairy industry. Mineral industries are being organised. Tourism has expanded considerably.

President: Daniel Arap Moi.

Mission in India: High Commission of Kenya, 66, Vasant Marg, Vasant Vihar, New Delhi-110 057. Tel: 672303.

KIRIBATI

Cap: Tarawa; **Area:** 861 sq. km; **Pop:** 60302; **Lang:** Gilbertese and English; **Rel:** Christian; **Currency:** Dollar.

Gilbert Islands, till recently a British colony, became independent under the name Kiribati (pronounced Kiribas) on July 11, 1979.

These islands, spread over a vast area in the Western Pacific, number around 33. All islands except Ocean Island (Banaba) are low atolls with coconuts, pandanus and bread fruit forming the main vegetation. The population is Micronesian and Polynesian. Agriculture and fishing are the main occupations. Ocean Island has high grade phosphatic deposits which are being mined and exported. Copra is the other major export item.

President: Ieremia Tabai.

KOREA (North)

Cap: Pyongyang; **Area:** 1,20,538 sq.km. **Pop:** 1,96,30,000; **Lang:** Korean; **Rel:** Buddhist and Confucian;**Currency:** Won. US $1=0.94 Won

The Democratic People's Republic o Korea occupies the northern part of the Korean peninsula. It lies between the Yellow Sea and the Sea of Japan. China is in the north.

During the Second World War, America occupied South Korea and Russia,North Korea. At the Potsdam Conference, the 38th parallel of latitude was recognised as the line of division between the occupation areas o Russia and America. North Korea was formed into the Democratic People's Republic of Korea on Sept. 9, 1948.

All industries were nationalised and lan distributed among the peasants. Agriculture has since been collectivised. Industrial development has concentrated on heavy industry, electricity, metallurgy, machinery an chemicals. The country is rich in coal an iron and many non-ferrous metals. It is one o the five leading countries of the world in th production of tungsten, graphite and magnestie.

President: Kim Il Sung, **PM:** Kang Son San.

Mission in India: Embassy of the Democratic Peoples' Republic of Korea, 42-4 Sunder Nagar, New Delhi-110 003. Te 617140.

KOREA (South)

Cap: Seoul; **Area:** 98,859 sq.km.; **Pop** 4,03,09,000; **Lang:** Korean. **Rel:** Buddhis Christian and Confucian; **Currency:** Wor US $1=843.80 Won.

The Republic of Korea forms the souther part of the Korean peninsula. It is bounde on the north by the Democratic People' Republic of Korea, on the east by the Sea c Japan and on the west by the Yellow Sea The Republic of Korea was formerly proclaimed on August 15, 1948.

Agriculture is the mainstay of the economy. The chief crop is rice. Wheat, barle and potatoes are also cultivated. Fish is bot an export item and a source of food. Ther are substantial coal deposits. Other minera include iron, tungsten, graphite and fluorit New industries have been started, notably i textiles, electronics, steel and petrochemicals.

President: Gen. Chun Du Hwan; **P.M** Lho Shin Yong.

Mission in India: Embassy of Republic of Korea, 9 Chandragupta Marg, Chanakyapuri, New Delhi-110 021. Tel: 601601.

KUWAIT

Cap: Kuwait City; **Area:** 17,656 sq.km.: **Pop: 17,03,000: Lang:** Arabic and English; **Rel:** Islam; **Currency:** Dinar. US $1=KD 0.307.

Kuwait, a small Arab state, is on the north western coast of the Persian Gulf between Iraq and Saudi Arabia. Kuwait is one of the richest countries in the world.

Kuwait was traditionally under the rule of the Al-Saban dynasty, founded in 1756. It became an independent state on June 19, 1961.

Kuwait is the world's fourth largest producer of petroleum.

Amir: Shaikh Jabir al-Ahmad al-Jabir al-Sabah. PM: Shaikh Saad al-Abdullah al-Salem al-Sabah.

Mission in India: Embassy of Kuwait, 5-A, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 600791.

LAO P.D.R.

Cap: Vientiane; **Area:** 2,36,800 sq.km. **Pop:** 3,600,000; **Lang:** Lao & Tribals; **Rel:** Buddhist; **Currency:** Kip. US $1=K35.

Laos–Lao People's Democratic Republic occupies a strategic position in south east Asia, bounded on the north by China, on the east by Vietnam, on the south by Kampuchea, on the west by Thailand and on the north west by Burma. Laos became an independent republic in 1949.

The chief products are rice, tobacco, cotton, benzoin, shellac, tin, lead, zinc and teak wood. Other industries exist but on a very small scale.

President: Phoumi Vongvichit (Ag.), **PM:** Kaysone Phomvihane.

Mission In India: Embassy of the Lao P.D.R., 20 Jor Bagh, New Delhi-110 003. Tel: 616187.

LEBANON

Cap: Beirut: **Area:** 10,400 sq.km.; **Pop:** 26,44,000; **Lang:** Arabic, **Rel:** Christian and Muslim; **Currency:** Pound. US $1=£Leb. 18.75.

The Republic of Lebanon occupies a strip of land along the Mediterranean coast between Syria and Israel. Lebanon became independent in 1941.

2-yr Maternity Leave

The Kuwaiti Parliament on January 16, last voted by a large majority to grant pregnant female Government employees two-year leave periods at half-pay in a bid to boost the national population.

The vote came despite objections by Finance and Economy Minister Jaseem Al-Khorafi, who said that in addition to the budgetary cost, the step would deplete the ranks of school teachers and other predominantly female work sectors.

The Bill provides for a fully paid maternity leave of two months, with the option of an additional two-year leave at half-salary "to raise the child".

Each woman is entitled to these benefits for a maximum of three pregnancies.

Primarily an agricultural country, Lebabon produces olive oil, grain and fruits. The chief industries are oil refining, food processing and cement. Tourism is a valuable source of income.

President: Amin Gemayel. **PM:** Rashid Karami.

Mission in India: Embassy of Lebanon, 10, Sardar Patel Road, New Delhi-110 021. Tel: 3013174.

Consulate: Calcutta– 27A, Camac street, Calcutta-700 016. Tel: 44-7867.

LESOTHO

Cap: Maseru; **Area:** 30,355 sq.km. **Pop:** 14,81,000; **Lang:** English and Sesotho; **Rel:** Christian and Tribal; **Currency:** Loti (Plural Maloti). US $1=2.06 Maloti.

The Kingdom of Lesotho is an enclave within the Republic of South Africa. Lesotho was a British protectorate under the name Basutoland. It became independent as Lesotho on Oct. 4, 1966.

The principal occupation is agriculture Lesotho possesses water and hydro-electric resources of great potential. Live-stock, diamonds, wool and mohair are the main exports

Head of the State: King Moshoeshoe. **PM:** Chief Leabua Jonathan.

LIBERIA

Cap: Monrovia; **Area:** 1,11,369 sq.km. **Pop:** 21,23,000; **Lang:** English and Tribal; **Rel:** Christian. **Currency:** Dollar. US $1=1 Liberian $.

This independent republic lies on the Atlantic coast with Sierra Leone on the north-west. Guinea on the north and Ivory Coast on the east.

Liberia was founded in 1822 and declared a republic on July 26, 1847.

About 90 per cent of the population is engaged in agriculture, much of it at subsistence level. Main crops are cassava; coffee, cocoa and palm oil. Iron ore and rubber are the main exports.

President: Maj. Gen. Samuel Kanyon Doe.

Mission in India: Embassy of the Republic of Liberia, Plot No. 79, Poorvi Marg, Vasant Vihar, New Delhi-110 057.

Consulate General, 186 Sarat Bose Road, Calcutta-700 029. Tel: 46-1164.

LIBYA

Cap: Tripoli; **Area:** 17,59,540 sq.km; **Pop:** 35,00,000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Dinar. US $1=LD 0.30.

Libya changed its name to 'The Socialist People's Libyan Arab Jamahiriya' in 1977. 'Jamahiriya' means 'State of the masses'. An Arab state on the north coast of Africa, Libya is bounded by Egypt, Sudan, Tunisia, Algeria, Niger and Chad.

Formerly an Italian colony, Libya became an independent state in 1949.

The main agricultural products are dates, olives, almond and citrus fruits. Fishing, tobacco processing, dyeing and weaving are the important industries. Oil was discovered in 1957 and today Libya is one of the leading producers of oil in the world.

Leader of the Great Ist of September Revolution: Col. Muamar Al-Qudhafi; **P.M.:** Jadallah Abu-al-Talhi.

Mission in India: People's Bureau of the Socialist People's Libyan Arab Jamahiriya, 22, Golf Links, New Delhi-110 003. Tel: 697717

LIECHTENSTEIN

Cap: Vaduz; **Area:** 160 sq.km. **Pop:** 26,512; **Lang:** German; **Rel:** Christian; **Currency:** Swiss Franc.

Liechtenstein is a small state on the upper Rhine, between Austria and Switzerland. It measures 24 km from north to south and 9 km from east to west. It became an independent kingdom in 1866.

The economy is mainly industrial. Chief industries are machines and tools, textiles, foodstuffs and leatherware.

Head of State: Prince Franz Josef. **PM:** Hans Brunhart.

LUXEMBOURG

Cap: Luxembourgville; **Area:** 2586 sq.km.; **Pop:** 3,66,000; **Lang:** French, (English. German are freely spoken); **Rel:** Christian, 95% Roman Catholics); **Currency:** Luxembourg Franc (LF).

Luxembourg is a small state lying in between Germany, Belgium and France. It is a Grand Duchy.

Its independence was confirmed by the Treaty of London in 1867.

As a member of the European Economic Community, the Benelux, the European Steel and Coal Community and the Euratom, Luxembourg is a highly industrialised state. Its iron deposits form the basis of a big steel industry, which accounts for 70 per cent of the country's exports. Agriculture occupies only 10 per cent of the population.

Head of the State: Grand Duke Jean. **President:** Jacques Santer.

Mission in India: Consulate General of the Grand Duchy of Luxembourg, 2 Panchsheel Marg, Chanakyapuri, New Delhi-110 021. Tel: 3015855.

MACAO

Cap: Macao; **Area:** 15.5 sq.km. **Pop:** 2,61,680; **Lang:** Portuguese and Cantonese, **Rel:** Confucian; **Currency:** Pataca. HK $100=103 Patacas.

Macao or Macau is a tiny Portuguese possession in South China, at the mouth of the Sinkiang river. The territory consists of the Macao peninsula and the adjoining islands o Taipa and Coloane. China has permitted Macao to continue as an independent territory mainly because of the big entrepot trade it commands. Macao is a free market for gold and an infamous centre of smuggling and gambling.

The population is almost entirely Chinese. Industry, once restricted to matches and fireworks, now includes plastics, textiles, cameras, binoculars and such other consumer items. Cultivation is sparse. Only rice and vegetables are grown.

Governor: Cdr. Vsco Almeida e Costa.

MADAGASCAR

Cap: Tananarive; **Area:** 5,87,341 sq.km.; **Pop:** 97,31,000; **Lang:** Malagasy and French; **Rel:** Islam; **Currency:** Franc. US $1=719.84 FMG.

Madagascar, formerly a French overseas territory, is a large island about 500 km long off the coast of Mozambique. It became independent in 1960.

The economy is essentially agricultural. Rice is the staple food and coffee the chief export. Tobacco, cloves and vanilla are also cultivated. Large herds of cattle are raised. Mineral deposits include graphite, mica, nickel and copper. Since 1960, chromite is being mined.

President: Comdr. Didier Ratsiraka; **PM:** Lt. Col. Desire Rakotoarijaona.

MALAWI

Cap: Licongwe; **Area:** 1,18,784 sq.km. **Pop:** 67,88,000; **Lang:** English and Chichewa; **Rel:** Tribal and Muslim; **Currency:** Kwacha. US $1=K1.64.

Malawi is bounded by Tanzania, Mozambique and Zambia. Lake Nyasa lies on its eastern side. A land of lakes and mountains. Malawi has infinite beauty and is considered a tourists' paradise. Malawi, formerly Nyasaland, became independent in 1966.

Poor in resources, Malawi's agriculture is still at a subsistence level. The chief cash crops are tea and tobacco, sugar and cotton.

President: Hastings Kamuzu Banda.

MALAYSIA

Cap: Kuala Lumpur; **Area:** 3,30,434 sq km. **Pop:** 1,52,04,000; **Lang:** Bahasa Malaysia; **Rel:** Muslim. **Currency:** Ringgit. US$1=2.4 Ringgit.

Malaysia is a federation of 13 states comprising Johor, Kedah, Kelantan, Melakaa, Nigeri Sembilan, Pahang, Perlis, Pulau Pinang, Sabah, Sarawak, Selangor and Terengganu. Each state has its individual appeal and characteristics.

Peninsular Malaysia is bordered on the east by the South China Sea, on the south by the Straits of Johore, on the west by the Straits of Melaka and on the north by Thailand.

Malaysia has a multi-racial populace. Total population is about 15 million consisting of 55 per cent Malays, 33.4 per cent Chinese, 10.1 per cent Indians and 1.4 per cent others.

Malaysia achieved its independence in 1957.

Malaysia is the world's largest producer of rubber, tin and palm oil. Malaysia is also the world's leading exporter of pepper and timber. Other crops of significance are coconut, vegetables, pineapples, coffee, tea, cocoa, etc.

Iron ore, gold, ilmenite and bauxite are the major mineral resources. The petroleum industry in Malaysia is becoming significantly important to the economy of the nation. Leading industries are food products, tobacco, wood products, electrical goods, textile, chemical products, construction goods, non-metallic products, transport equipment and te processing of agricultural products estates (eg. rubber, palm oil).

Supreme Head of State: Sultan Mahmood Iskandar Ibni Al-Marhum Sultan Ismail. **P.M.** Dr. Mahathir bin Mohamad.

Mission in India: High Commissioner of Malaysia, 50-M Satya Marg, Chanakyapuri, New Delhi-110 021. Tel: 601291.

Madras: Hon. Consul, No. 23, Khader Nawaskhan Road, Madras-600.

MALDIVES

Cap: Male; **Area:** 298 sq.km. **Pop:** 1,68,000; **Lang:** Divehi; **Rel:** Islam, **Currency:** Rufiyaa (Maldivian Rupee).

Maldives (literally, islands of Male–from the Sanskrit 'dweep' meaning island) is an archipelago in the Indian Ocean, to the southwest of India and west of Sri Lanka. The archipelago consists of 12 coral atolls and about 2000 small islands. It extends for about 300 miles north to south

The Maldives attained independence on July 26, 1965. It became a republic in November, 1968.

Most of the people are seafarers. Coconuts, fruits and millet are the main crops. The chief occupation is fishing and production of processed fish is the main industry.

President and P.M.: Maumoon Abdul Gayoom.

MALI

Cap: Bamako; **Area:** 12,39,998 sq.km. **Pop:** 78,25,000; **Lang:** French (official); **Rel:** Muslim and Tribal; **Currency:** Mali Franc. French F1=50 Francs CFA.

Mali is a land-locked state in West Africa, bounded by Algeria on the north, Mauritania and Senegal on the west, Guinea and Ivory Coast on the south and Burkina Faso and Niger on the east. It was proclaimed an independent republic in 1960.

The country is poor in natural resources. Only about 20 per cent of the land is cultivable. The main crops are rice, millet and groundnuts. Livestock-raising is important and the processing of hides and skins remains the only industry. There is extensive river-fishing and good export trade in dried and smoked fish.

President and P.M.: Moussa Traore.

MALTA

Cap: Valletta; **Area:** 316 sq.km. **Pop:** 3,80,000; **Lang:** Maltese and English; **Rel:** Christian; **Currency:** Lira Malija. US $1=Lm 1.95.

Malta is an island in the central Mediterranean Sea, 58 miles from Sicily and about 180 miles from the African coast. This state also includes the adjoining islands of Gozo and Comino. Malta became an independent republic in 1964.

The rocky country has no natural resources. Textiles, footwear, rubber products and plastics are now exported. Agricultural products include onions, potatoes and tomatoes. Tourism, however, remains the island's major industry.

President: Agatha Barbara. **P.M.:** Dr. Karmenu Mifsud Bonniei.

MAURITANIA

Cap: Nouakchott; **Area:** 10,30,700 sq.km.; **Pop:** 18,32,000; **Lang:** Arabic and French (official); **Rel:** Islam; **Currency:** Ouguiya. US $1=67.16 Ouguiya.

The Islamic Republic of Mauritania is on the Atlantic coast of the West African bulge. It is bordered by Morocco, Algeria, Mali and Senegal.

Mauritania, a former French overseas territory, became autonomous in 1958 and fully independent in 1960.

The population is traditionally nomadic rearing cattle and sheep. Fishing is important. Important deposits of iron and copper have been sighted and are being exploited. Oil prospecting goes on.

President and P.M.: Lt. Col. Mohamed Khouna Ould Haydalla.

MAURITIUS

Cap: Port Louis; **Area:** 2040 sq.km.; **Pop:** 10,31,000; **Lang:** English, French and Hindustani; **Rel:** Hindu, Christian and Muslim; **Currency:** Rupee. US $1=Rupees 16.84.

• Mauritius lies about 500 miles east of Madagascar in the Indian Ocean.

It became an independent state on March 12, 1968.

The island is an extreme example of one-crop economy, sugarcane being the only crop that supports the economy. Molasses, tea and tobacco are exported. In recent years, rapid advance has been made in the field of import substitution and export oriented industries.

Head of State: Queen Elizebeth II. **Gov. Gen:** Sir Veera Swamy Ringadoo. **P.M.:** Aneerood Jugnauth.

Mission in India: High Commission of Mauritius, 5 Kautilya Marg, Chanakyapuri, New Delhi-110 021. Tel: 3011112.

MEXICO

Cap: Mexico City; **Area:** 19,72,547 sq.km.; **Pop:** 7,70,40,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Peso. US$1=530 Pesos.

A federal republic of middle America, Mexico is bounded by the US, Belize and Guatemala. The Gulf of Mexico and the Gulf of Campeche are in the east while the Pacific Ocean and the Gulf of California are in the west. Mexico became an independent state in 1821.

Mexico is well suited for agriculture so it is not obliged to import food. The important agricultural products are maize, rice, wheat and sugar. Sea fishing is also important as an occupation. Mexico is the world's leading producer of silver, sulphur and fluorite. Other minerals include coal, zinc, lead, manganese, bauxite and uranium. In recent years, Mexico has become one of the main producers and exporters of petroleum.

President: Miguel de la Madrid Hurtado.

Mission in India: Embassy of Mexico, 10 Jor Bagh, New Delhi-110 003. Tel: 697991.

MONACO

Cap: Monaco; **Area**: 195 sq.km. **Pop**: 27,063; **Lang**: French & Monegasque; **Rel**: Christian; **Currency**: Franc.

Monaco is a sovereign principality on France's south-eastern Mediterranean coast.

The principality is a series of connected towns–Monaco-Ville, La Condamine, Fontvieille and Monte Carlo with its casino, opera house, grand hotels, shops and villas.

Monaco is a fashionable pleasure resort visited by thousands of tourists every year. Its main attractions are the gambling casino and its international motor sports–the Monte Carlo Rally and the Monaco Grand Prix. Tourism, gambling, taxes and tobacco monopoly are its main sources of income.

There are a number of light industries.

Head of State: Prince Rainier III.

Mission in India: Consulate General of Monaco, 114, Sundar Nagar, New Delhi-110 003. Tel: 623193.

MONGOLIA

Cap: Ulan Bator; **Area**: 15,65,000 sq.km.; **Pop**: **18,51,000**; **Lang**: Mongolian; **Rel**: Buddhist and Lamaism; **Currency**: Tugrik. US$1=3.36 Tigrik.

The Mongolian People's Republic lies in Central Asia with the Soviet Union to the north and China to the south, east and west. It became an independent state in 1921.

Livestock-raising is the principal occupation and comprises horses, oxen, sheep, goats and camels. The herdsmen are organised in collectives. State farms, of which there were 49 in 1980, practise large-scale agriculture. Minerals include coal, flourspar, tungsten, tin and copper.

Chairman of the Presidium: Dr. Jambyn Batmunkh. **P.M.**: D. Sodnom.

Mission in India: Embassy of the Mongolian People's Republic, 34, Archbishop Makarios Marg, New Delhi-110 003. Tel: 618921.

Largest Debtors

Mexico will be the largest debtor among developing countries by 1987, owing foreign creditors S 108 billions. The country will pay its creditors S 10 billions in interest till December this year — equal to the credits it will receive during that period.

Peru will, meanwhile, allocate 1.5 per cent — amounting to S 240 millions — of its Gross National Product (GNP) to service its foreign debt during 1987.

The United States became the world's largest debtor country in 1985, first time America has slipped into the status of a net debtor since the early part of the century.

The Commerce Department said that the country's international investment position was a negative 107.4 billion dollars at the end of 1986.

The development marked a dramatic turn around from the country's position just a year earlier, when the United States enjoyed a surplus on its investments of 4.4 billion dollars.

The number means that foreigners now own more US investments than Americans own in foreign investments.

MONTSERRAT

Cap: Plymouth; **Area**: 102 km; **Pop**: 12,074; **Lang**: English and Patois; **Rel**: Christian; **Currency**: Dollar.

Montserrat, like Antigua, is one of the Leeward Islands. Its population is of mixed European-Negro origin. Europeans proper form a minority. Agriculture is the mainstay of the people. Sea island cotton and vegetables like tomatoes form the main exports.

It is a British Associate State with full internal autonomy.

Gov: A.C. Watson; **Chief Minister**: Dr J.A. Osborne.

MOROCCO

Cap: Rabat; **Area**: 8,00,000 sq.km; **Pop**: 2,28,48,000; **Lang**: Arabic, **Rel**: Islam, **Currency**: Dirham. US $1 = 9.95 DH

The Kingdom of Morocco, which is a constitutional, democratic and social Monarchy, is situated at the extreme northwest of Africa. It is bordered by Algeria in the east and Mauritania in the south, the North Atlantic Ocean in the west and the Mediterranean Sea in the north. The Atlas mountains stretch across Morocco.

Morocco recovered its political independence from France on March 2, 1956, and gained control over the Northern Spanish zones in 1958.

Primarily an agricultural country, Morocco produces cereals, including barley, wheat and corn. Vineyards are abundant and dates form a regular crop. Livestock raising is important and fishing is well-developed. The most important mineral extracted is phosphate, of which Morocco remains a world supplier. Other minerals are iron ore, coal, lead and manganese

Sahara Govt. Recognised

The Government of India announced on Oct. 1, 1985 its recognition of the Sahrawi Arab Democratic Republic (SADR) set up by the Polisario in Western Sahara, a territory that came under Morocco's control after Spain withdrew from there.

The decision was taken by the Prime Minister, Rajiv Gandhi, after careful consideration of various aspects of this controversial issue affecting India's relations with Morocco which was claiming this territory and Algeria that was actively supporting the Polisario-led struggle for its independence.

At one stage India had declared that it would abide by the decision of the Organisation of African Unity (OAU) which, along with the U.N., has been supporting the move for an international study of the situation.

As a sequel Morocco broke diplomatic relation with India.

The new Republic is headed by President Mohammed Abde Aziz (who is also Secretary-General of the Polisario Front) and P.M. Mohammed Lamine.

Head of State: King Hassan II.

Mission in India: Embassy of Morocco, 33 Golf Links, New Delhi-110 003.

MOZAMBIQUE

Cap: Maputo; 783,030 sq. km; **Pop:** 13693000; **Lang:** Portuguese, Bantu; **Rel:** Muslim and Christian; **Currency:** Metical (Plural: Meticais). US $1=44.87 Meticais.

Mozambique, formerly Portuguese East Africa, has for its neighbours Swaziland on the south, South Africa on the south and west, Zimbabwe, Zambia and Malawi on the west and Tanzania on the north. Mozambique Channel of the Indian Ocean bounds it in the east. The majority of the population belongs to the *Bantu* tribe.

The economy is based on agriculture. The major cash crops are cashewnuts, sugar, cotton, and sisal. Maize, bananas, rice and coconuts are also grown. Considerable mineral resources exist although only coal, diamonds and bauxite are now exploited. Mozambique has two-thirds of the world's known reserves of tantalite and is the second largest producer of beryl.

President: Joaquim Chissano; **P.M.**: Marc da Graca Machungo.

NAMIBIA

Cap: Windhoek; **Area:** 824,292 sq. km **Pop**: 1507000; **Lang**: English & Afrikaans **Rel**: Christian and Tribal; **Currency**: Rand

Namibia, formerly known as South Wes Africa, lies on the Atlantic coast of Africa. The Atlantic Ocean flanks it on the west, Angol lies to the north, Zambia to the northeast Botswana to the east, and South Africa to the south and southeast.

The biggest population group is *th Owambos.*

Diamonds are Namibia's most valuabl economic asset followed by copper, zinc lead, germanium and manganese. Stock breeding is important; cattle, sheep an goats abound. Fishing is a supplementar source of food and income.

NAURU

Cap: Nauru; **Area:** 20.9 sq.km; **Pop**: 842 **Lang**: English and Nauruan; **Rel:** Christiar **Currency**: Dollar.

Nauru is a small island in the central Pacific. It is an oval-shaped coral island of approximately 12 miles in circumference, surrounded by a reef which is exposed at low tide. Nauru became an independent republic on Jan.31, 1968.

About four-fifths of the area of Nauru is phosphate-bearing rock. Phosphates form the only export.

President: Kennan Adeang.

Mission in India: Consulate General of the Republic of Nauru, C-5/4, Safdarjung Development Area, New Delhi-110 016. Tel: 667977.

NEPAL

Cap: Kathmandu; **Area:** 147,141 sq. km; **Pop:** 16107000; **Lang:** Nepali; **Rel:** Hindu and Buddhist, **Currency:** Rupee. US$1=19 Rupees.

Nepal is a kingdom in the southern slope of the Himalayas, situated between India and China.

Nepal is rich in forest wealth and quartz deposits. The principal exports are jute, rice, cattle, hides, wheat and herbal drugs.

King: Birendra Bir Bikram Shah Dev. **P.M:** Marich Mansingh Shrestha.

Mission in India: Royal Nepalese Embassy, Barakhamba Road, New Delhi- 110 001. Tel: 381484.

Consulate: 19, Woodlands, Sterndale Road, Calcutta-700 027. Tel: 45-2024.

NETHERLANDS

Cap: Amsterdam, Seat of Govt: The Hague, **Area:** 41,160 sq km; **Pop:** 144456000; **Lang:** Dutch; **Rel:** Christian; **Currency:** Guilder. US $1=2.50 Guilders.

The Kingdom of the Netherlands comprises the Netherlands and Antilles. The Netherlands is located in Europe, between Belgium and the Federal Republic of Germany. The country is plainland with an average height of 37 ft. above sea-level. Much of the land, however, is below sea-level and is protected by dykes, which extend for some 1500 miles.

Agriculture has been mechanised and developed. Foodstuffs form the largest industrial sector. Dairy products account for one-quarter of exports. Other major industries include chemicals, metallurgy, machinery and electrical goods. Amsterdam is famous as a world centre for diamonds, precious metals and art treasures.

At last War Ends!

An European war ended on the night of Thursday, 17th April 1986, after 335 years.

Mr. Jonkheer Rein Huydecoper, Dutch ambassador to Britain, presented the civic leaders of the Scilly Isles with a peace treaty terminating their hostilities.

The Dutch and the Scillinians all 1,450 of them, have officially been enemies since 1651 when the Netherlands declared war in tiff over piracy.

The Scillys, which belong to Britain, are a chain of tiny islands, five inhabited and 30 unihabited, a few km off the coast of Cornwall, South-West England.

Moves to end of the conflict were pressed by Mr. Roy Duncan, 36-year-old Chairman of the islands' Council. Mr. Huydecoper declared: "The islanders can at last rest easy in their beds". He apologised for the Dutch failure to notify the islanders that the war was over. He blamed the post office, for not having been invented at the time.

Head of State: Queen Beatrix.

Mission in India: Embassy of Netherlands, 6/50 F, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 609571.

Hon. Consul, Chordia Mansion, 739, Annasalai, Madras-600 002. Tel: 811566.

NEW ZEALAND

Cap: Wellington; **Area:** 269,057 sq.km; **Pop:** 3264000; **Lang:** English and Maori dialect; **Rel:** Christian; **Currency:** Dollar US $1=0.56 NZ$.

New Zealand, lying in the South Pacific Ocean with Tasman Sea on the west, consists of two large islands, North island and South island and numerous small islands. It gained dominion status in 1907

Primary industries are dairying, meat and wool. The major crops are wheat, oats and barley. Minerals include coal and gold. Pulp and paper industry is highly developed. Iron, steel and aluminium are new industries.

Head of State: Queen Elizabeth II, **Gov. Gen:** Sir Paul Reeves, **P.M:** David R. Lange.

Mission in India: High Commission of New Zealand, 25 Golf Links, New Delhi- 110 003. Tel: 697296.

NICARAGUA

Cap: Managua; **Area:** 130,000 sq.km; **Pop:** 3162000; **Lang:** Spanish, English; **Rel:** Christian; **Currency:** Cordoba. US $1=10 Cordoabas.

The republic of Nicaragua is located in the heart of Central America, bordered on the north by Honduras, on the south by Costa Rica, on the east by the Caribbean Sea and on the west by the Pacific Ocean. It became an independent state in 1838. The Somoza dynasty ruled Nicaragua from 1933 to 1979.

The third Somoza was overthron by armed revolution led by Sandinista National Liberation Front, which has emerged as the leading political force in the election held in 1984. But a Civil War is being waged aganist the present Ortega Govt. by former members of Nicaraguan National Guard (Somoastan), operating from Honduras with US support.

Agriculture is the principal source of national income. The most important agricultural products are cotton, coffee and sugar-cane. Chief industries are matches, leather, beer and plastic goods. Gold, copper, silver, lead and zinc are found.

President: Daniel Saavedra Ortega.

Mission in India: Embassy of the Republic of Nicaragua, C-5/29, Safdarjung Development Area, New Delhi-110 016. Tel: 657109.

NIGER

Cap: Niamey; **Area:** 1,267,000 sq.km; **Pop:** 5940000; **Lang:** French and Hausa; **Rel:** Muslim and Tribal; **Currency:** Franc CFAO French F1=50 F CFA.

The Republic of the Niger lies in the heart of West Africa. It is surrounded by Algeria and Libya in the north, Chad in the east, Nigeria and Benin in the south and Burkina Faso and Mali; in the west.

Formerly part of French West Africa, Niger became fully independent in 1970.

It is an agricultural country with very limited resources. The principal crops are peanuts and cotton. Cattle-breeding is the next most important occupation of the people. Uranium has been discovered and mining is going on.

President: Maj. Gen. Seyni Kountche. **P.M:** Hamid Algabid.

Mission in India: Hon. Consul, 119 Broadway, Madras-600 001. Tel: 22200.

NIGERIA

Cap: Lagos (Federal); **Area:** 923,768 sq.km; **Pop:** 92037000; **Lang:** English, Hausa, Ibo and Yoruba; **Rel:** Muslim, Christian and Tribal; **Ex. R:** 0.56977 Naira=US $1; **Currency:** Naira. US $1=0.86 Naira.

The Federation of Nigeria is a West African coastal state within the Gulf of Guinea, with Niger to the north, Benin to the west and Cameroon to the east. River Niger flows through south western Nigeria towards the south where it is joined by its chief tributary the Benue, and empties into the Gulf of Guinea, creating an extensive swampy delta.

Nigeria became an independent state in 1960 and a republic within the Commonweath in Oct. 1963.

The chief agricultural products are cocoa, plam oil, palm kernels, cotton, rubber, peanuts and skins. Tin, lead, columbite, coal and iron ore represent the chief minerals. There is extensive exploitation of the forest for various timbers. Crude oil exports have become important since 1970. Industry is diversified, beer, cement, cigarettes and aluminium products being the main items.

Head of State and Govt: Maj. Gen: Ibrahim Babangida.

Mission in India: High Commission of Nigeria, 21 Palam Marg, Vasant Vihar, New Delhi- 110 057. Tel: 670405.

NORWAY

Cap: Oslo; **Area:** 323,895 sq.km; **Pop:** 4140000; **Lang:** Norwegian; **Rel:** Christian; **Currency:** Krone. US $1=7.2 Kroner.

Norway extends along the western part of the Scandinavian Peninsula from the

Skagerrak which separates it from Denmark to the North Cape in the Arctic Ocean, where it meets Finland and Soviet Russia.

Norway is known as the *Land of the Midnight Sun*, because in the North Cape area, the sun does not set from middle May until the end of July, nor does it rise above the horizon from the end of November to the end of January.

The important agricultural products are barley, oats, rye and potatoes. Fishing is a major occupation with immense quantities of cod, herring, whale, tuna, seal, mackerel and salmon. Forests provide raw material for many industries. Mining is an important industry. There is very little coal but plenty of hydro-electric power to run big factories. The principal manufactures are food products, machinery and metal work, wood, paper and pulp, aluminium and electro-chemical products.

Head of State: King Olav V. **P.M:** Gro Harlem Brundtland.

Mission in India: Embassy of Norway, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 605982.

Consulate: Bombay— Nauroji Mansion, 31 Nathelal Parekh Marg.

Calcutta: Calland House, 6th Floor, Chitrakoot, 230 Bose Road, Calcutta.

Madras: 23, VI Main Road, Raja Annamalaipuram, Madras-600 028. Tel: 20561.

OMAN

Cap: Muscat; **Area:** 300,000 sq.km; **Pop: 1,500,000; Lang:** Arabic; **Rel:** Islam; **Currency:** Rial Omani (1000 Baiza). US $1=348 Baiza.

The Sultanate of Oman, formerly Muscat & Oman, occupies the south eastern part of the Arabian Peninsula. Its coastline stretches along the Arabian Sea, the Gulf of Oman and the Persian Gulf. Oman adopted the present name in 1970.

Where there is water, the land is very fertile. The Batina coastal plain is famous for its dates, fruits and grains. Oil, however, is the ace of the economoy.

Head of State & Govt: Sultan Oabus bin Said.

Mission in India: Embassy of Oman, 16, Palam Marg, Vasant Vihar, New Delhi-110 057. Tel: 670215.

PAKISTAN

Cap: Islamabad; **Area:** 796,095 sq. km; **Pop:** 98971000; **Lang:** Urdu; **Rel:** Islam; **Currency:** Rupee, US$1=16.03 Rupees.

The Islamic Republic of Pakistan, now confined to West Pakistan, originally came into existence in 1947, following the partition of India into two states, India and Pakistan. Its eastern wing, formerly clled East Pakistan, fell apart in 1971. Pakistan is bordered by Afghanistan, Iran, India and China.

Agriculture is the mainstay of Pakistani economy. Wheat, sugarcane, cotton and rice are the major crops. Industries are being developed with indigenous resources and foreign knowhow and assistance. A wide range of minerals like graphite and limestone remain to be exploited.

President: Gen. Mohammed Zia-Ul-Haq: **PM:** Mohammed Khan Junejo.

Mission in India: Embassy of Pakistan, 2/50-G, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 600601.

PANAMA

Cap: Panama City; Area: 77,082 sq. km: **Pop:** 2134000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Balboa, US$1=1Balboa.

Panama is a narrow strip of territory at the southern end of the Isthmus separating North and South America. It is situated between Costa Rica and Colombia. The Caribbean Sea is on the north and the Pacific Ocean in the south. And its narrowest point, 50 miles wide, the Atlantic and the Pacific Oceans are united by the famous Panama Canal. It declared itself independent in 1903.

Control over the Panama Canal, linking the Atlantic and Pacific Oceans, had long been a bone of contention between the US and Panama. In 1978, it was agreed that the US will relinquish all its claims in favour of Panama at the close of the century.

The soil is extremely fertile but nearly one-half of the land is uncultivated. The chief crops are bananas, coffee and cereals. Industry is mainly centred around sugar and alcoholic beverages. Shrimp fishing is important. There are excellent timber resources, notably mahogany.

President: Eric Arturo Delvalle.

Mission in India: Embassy of Panama,

D-129, Panch Sheel Ennclave, New Delhi-110 017. Tel: 643-8620.

Consulate: Bombay Maker Arcade, Cuffee Parade, 53, Ground Floor, Bombay-400 005. Tel: 21-5585.

PAPUA NEW GUINEA

Cap: Port Moresby; **Area:** 462,840 sq. km; **Pop:** 3601000; **Lang:** Melanesian and Papuan; **Rel:** Christian and Tribal; **Currency:** Kina. US$1=K 1.04.

Papua New Guinea comprises the eastern section of the island of New Guinea and adjacent islands.

It is a region of lofty mountains and swampy plains. The surrounding islands are largely of volcanic or coral origin.

The population consists of dark-skinned Melanesians, who live mostly along the coasts and woolly-haired Papuans who inhabit the interior.

Agriculture occupies the majority of the population, most of whom are subsistence farmers. Sago, yams, taro, manioc, and sweet potatoes are the main food crops. Cash crops include coconuts, cocoa, coffee and rubber. The country has large deposits of various minerals. Gold and copper are being mined. Oil and natural gas have also been found.

Gov. Gen: Sir Kingford Dibela; **PM:** Palas Wingti.

PARAGUAY

Cap: Asuncion; Area: 406,752 sq. km; **Pop:** 3576000; **Lang:** Spanish, Guarani; **Rel:** Christian; **Currency:** Guarani, US$1=240 Guaranies.

Paraguay is one of the landlocked countries of South America surrounded by Bolivia, Brazil and Argentina. The Paraguay river is navigable for some 1800 miles and steamers come upto Asuncion which is the chief port of the state. This makes up for lack of coastline or sea harbours. It became independent in 1811.

About 75 per cent of the population is engaged in agriculture and allied pursuits with cattle breeding as an important occupation. The most important agricultural crops are corn, cotton, beans, tobacco and citrus fruits. The timber resources of the state are enormous. The chief exports are beef and other food products, quebracho (hard wood), hides and skins.

President: Alfredo Stroessner.

PERU

Cap: Lima; **Area:** 1,281,215 sq. km; **Pop:** 19197000; **Lang:** Spanish and Quechua; **Rel:** Christian; **Currency:** Sol. US$1=7521 Sol.

Peru, on the Pacific coast of S. America, has for its neighbours, Ecuador and Colombia in the north, Brazil and Bolivia in the east and Chile in the south. The Andes mountains dominate Peru. Some of the rarest species of animals, the vicuna, the llama, the alpaca and the cross-breed paco-vicuna are found in the Andean mountains, where they are now protected.

Peru was originally the seat of the famous Inca (Red Indian) Empire. It became independent on 28 July 1821.

The leading agricultural products are cotton, wool, sugar, coffee, rice and potatoes. Corn which is native to Peru is the staple food of the Indians, who also cultivate alfalfa. Fishing industry is well developed and Peru is the world's most important producer of fishmeal. The country is rich in minerals and some mines dating back to the Incas are even now worked. Peru is one of the leading producers of silver. Some of the biggest copper mines in the world are located in Peru. The chief exports are cotton, fish products, petroleum, sugar and iron ore.

President: Alan Garcia Perez; **PM:** Luis Alva Castro.

Mission in India: Embassy of Peru, D 1/39, Vasant Vihar, New Delhi-110 057. Tel: 674085. Shantiniketen, New Delhi-110 021.

Consulate: Bombay— 6 K Dubash Marg, Bombay-400 023.

PHILIPPINES

Cap: Manila; **Area:** 2,99,404 sq.km.; **Pop:** **5,33,95,000; Lang:** Filipino and English; **Rel:** Christian and Muslim, **Currency:** Peso. US $1=18.39 Peso.

The Philippines lies 600 miles off the southeast coast of Asia, 15 degrees above the equator. To its north lies Taiwan, to the south Borneo, to the east the Pacific Ocean, and to the west the China Sea.

An archipelago, the Philippines is composed of 7107 islands, which include the main island groups of Luzon, the Visayas, and Mindanao.

The country's industries include rubber products, oil-refining, fruit canning, flour milling, paper, salt, cigars and cigarettes, cement, fertilizers, plywood and lumber, metal and glassware, furniture and textiles, medicinal and pharmaceutical goods, food products and beverages.

Major agricultural crops are rice, maize, sugar, tobacco, abaca, pineapple, coconut, bananas, mangoes and others.

The Philippines is rich in natural resources and has iron, silver, gold, chromite, manganese and copper deposits in commercial quantitiy. It has also marble quarries, forests and extensive fishing grounds in its territorial waters.

Philippines became an independent republic on June 12, 1898.

President: Corazon C. Aquino.

Mission in India: Embassy of Philippines, 50-N, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 608491.

Consulate: Bombay– Industry House, 159 Churchgate Reclamation.

Calcutta– Mercantile Buildings (2nd Floor), Block E-10, Lal Bazar, Calcutta-700 001. Tel: 22-0514.

Madras– 97, Annasalai, Guindy, Madras-600 032. Tel: 432596.

POLAND

Cap: Warsaw; **Area:** 3,12,677 sq.km; **Pop:** 3,72,28,000; **Lang:** Polish; **Rel:** Christian; **Currency:** Zloty. US $1=141 Zlotys.

A People's Republic of Upper Central Europe, Poland is bordered by the Baltic Sea, USSR, Czechoslovakia and the German Democratic Republic.

Poland whose history goes back to the tenth centrury A.D. partitioned in 18th century, it became independent in 1918. The Nazi invasion on Poland in 1939 initiated the World War II. The country was liberated again in 1944.

Thirty-two percent of the population is engaged in agriculture. Chief crops are rye, wheat, oats, potatoes, sugar beets, tobacco and flax. The country has vast resources of mineral wealth, particularly coal, besides iron, lignite, natural gas, lead and zinc. Textiles, chemicals and metallurgy are old established industries. New industries include automobiles, tractors, heavy machinery, ship-building and aircraft. Main exports are ships, coal, steel and clothing.

Macau: the Last Bastion

Portugal will seek to delay her 430-year old enclave, Macau's transition to Chinese administration as long as possible, an informed Portuguese source said in July 9, 1986. Portugal's emissaries hope to persuade China it would be in the best interests of both sides if Lisbon continued to administer Macau for several years after 1997, the year neighbouring Hong Kong is set to revert to China.

Lisbon would like to prolong its administration of Macau in a belated bid to use the territory as a base for expanding Portugal's investment, trade and cultural presence in East Asia.

Chairman of State Council: Wojciech Jaruzelski. **P.M.** Zbigniew Messner.

Mission in India: Embassy of Poland, 50 M, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 608321.

Consulate: Bombay– Manavi Apartments, 36 B.G. Kher Marg.

Calcutta: 3-B, Albert Road, Calcutta-700 017. Tel: 44-7144.

PORTUGAL

Cap: Lisbon; **Area:** 92,072 sq.km; **Pop:** 1,00,08,000; **Lang:** Portuguese; **Rel:** Christian; **Currency:** Escudo. US $1=188 Escudos.

Portugal is a small rectangular territory in the southwest corner of the Iberian Peninsula. It is bounded on the north and east by Spain and the south and west by the Atlantic Ocean.

Portugal was an independent kingdom from the 12th century. It became a republic in 1910.

Nineteen per cent of the country is forest, where pine, oak, chestnut and cork grow in abundance. Vineyards are found everywhere and wines, olive oil and fruits are produced in large quantities. The major minerals are coal, copper, kaolin, wolframite, lithium and titanium. Textiles, chemicals, paper and glassware are the principal manufactures. The main exports are wine, canned sardines, tuna, anchovies, resins and cork

Portugal is one of the leading countries in the world which produce cork.

President: Dr. Mario Soares. **P.M :** Anibal Cavaco Silvy.

Mission in India: Embassy of Portugal, A-24 West End Colony, New Delhi-110 021. Tel: 674596.

PUERTO RICO

Cap: San Juan; **Area:** 8891 sq.km; **Pop:** 34,04,000; **Lang:** Spanish and English; **Rel:** Christian; **Currency:** Dollar.

The island of Puerto Rico lies 50 miles east of Hispaniola (Haiti and Dominican Republics) in the outer Caribbean. In 1952, it ceased to be a colonial possession and became a Free Commonwealth. It has close association with U.S. People have U.S. citizenship with no voting rights. There is a movement for full independence.

From a purely agricultural country, Puerto Rico is fast changing to an industrial economy. The main crops are sugar, tobacco and coffee. Industries include textiles, clothing, cigars, alcohol, chemicals and household appliances. Tourism is an important source of revenue.

QATAR

Cap: Doha; **Area:** 11,000 sq.km. **Pop:** 2,91,000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Riyal. US $1=3.64 Riyals.

Qatar is a 100-mile-long tongue of land jutting into the Persian (Arabian) Gulf. It is surrounded almost on three sides by the Persian Gulf. Saudi Arabia lies to the south.

It became independent in 1971 when Britain withdrew from the Persian Gulf. Qatar is an absolute monarchy.

Most of the population live in and around Doha, the capital. Immigrants from Pakistan, Iran and Oman now outnumber the native Qataris. Today the oil industry provides over 90% of the national income but employs only less than 5% of the population. Qatar is now connected by road to the rest of Arabia and by air to the rest of the world.

Amir: Sheikh Khalifah bin Hamad al Thani. **P.M :** Heir Apparent Sheikh Khalifah bin Hamad al Thani.

Mission in India: Embassy of Qatar, A-3 West End Colony, New Delhi-110 021. Tel: 673745.

Consulate: Bombay– Bajaj Bhavan, Nariman Point.

ROMANIA

Cap: Bucharest; **Area:** 2,37,500 sq.km; **Pop:** 2,28,97,000; **Lang:** Romanian; **Rel:** Christian; **Currency:** Leu. US $1=11 Lei.

Romania, lying in the South East of the Central part of Europe, borders on USSR to the north and east, on Hungary to the west, on Yugoslavia to the south west and on Bulgaria to the south.

The Black Sea shore has a length of 245 km. Modern Romania was formed in 1859. Industry now dominates Romania's economy. Romania became an industrial-agrarian country.

Heavy industries predominate drilling rigs for oil, equipments for oil refineries, petrochemical industry, cement, thermo and hydro electric power, diesel and electric locomotives of high capacity, engineering and consumer goods, etc.

Romanian agriculture recorded profound changes during the last three decades. The changes began with the land reforms of 1945. The small and middle-sized peasant properties were converted into co-operatives, a process which started in 1949 and ended in 1962. Land, which is the common property of the co-operative farmers, is tilled in common.

The exports are mostly made up of machines and equipment, chemical products, chemicals, fertilizers and industrial consumer goods.

President: Nicolae Ceausescu. **P.M :** Constantin Dascalescu.

Mission in India: Embassy of Romania 52/A Vasant Marg, Vasant Vihar, New Delhi-110 057. Tel: 670700.

RWANDA

Cap: Kigali; **Area:** 26,338 sq.km.; **Pop:** 59,03,000; **Lang:** French and Kinyarwanda; **Rel:** Tribal and Muslim; **Currency:** Rwanda Franc. US $1=108.18 RF.

Rwanda is a republic in Central Eastern Africa, just below the equator. It is bordered by Zaire, Uganda, Tanzania and Burundi. The population of Rwanda includes Watutsi, Bahutu and Batwa tribes.

The Republic of Rwanda, formerly part of the Belgian Trusteeship of Ruanda-Urundi in east central Africa, became independent in 1962.

The economy is agricultural and remains mainly at the subsistence level. Coffee, cotton and pyrethrum are the principal crops. Minerals include tin ore, tungsten, tantalite, and beryl. Industry is undeveloped. Livestock raising is wide-spread and hides and skins are exported.

President: Maj-Gen Juvenal Habyarimana.

SAN MARINO

Cap: San Marino; Area: 61 sq.km; **Pop:** 50,000; **Lang:** Italian; **Rel:** Christian; **Currency:** Lira.

The republic of San Marino is situated on the slope of Mount Titano in the Apennines on the Adriatic side at the tip of Italy.

It claims to be the oldest state in Europe, having been founded in A.D. 301.

The principal products are wheat, wine and olives. Industries include textiles, ceramics, cement, paper, leather and woollen goods. Tourism is the major source of revenue.

Captains-Regent: Marino Venturini 111 & Aristo Maiani I.

Mission in India: Consulate Central of San Marino, 15, Aurangzeb Road, New Delhi-110 011. Tel: 6411991.

SAO TOME & PRINCIPE

Cap: Sao Tome; **Area:** 964 sq.km; **Pop:** 102000; **Lang:** Portuguese, native dialects, **Rel:** Christian; **Currency:** Dobra. US$1=46.66 Dobra.

These two islands, with a few other nearby islets, lie in the Gulf of Guinea, about 125 miles from Gabon. Situated north of the equator, these islands have hot steaming weather in the summer, but plenty of rainfall. The largest of the islands is Sao Tome, on which stands *Sao Tome,* the capital and chief port.

These islands were under the Portuguese until 1975 when they became independent.

Today, the country's economy is geared almost exclusively to the production of agricultural export commodities, especially cocoa. Sao Tome has to import most of its food. There is virtually no manufacturing industry except soap, soft drinks, etc.

President and PM: Manuel Pinto da Costa.

SAUDI ARABIA

Cap: Riyadh (Royal) and Jeddah (Administrative); **Area:** 2,149,690 sq.km; **Pop:** 10824000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Rial. US$1=3.60 Rials.

Saudi Arabia occupies nearly four-fifths of the Arabian peninsula with the Yemen Arab Republic and the Red Sea on the west and the Gulf and the UAE on the east. Jordan and Iraq lie in the north and Kuwait in the north east. Oman and the P.D.R. Yemen are in the south.

In the province of Hejaz are Medina, where Mohammed the Prophet was buried on June 7, 632 and Makkah the birthplace of the Prophet. There is a great mosque in Makkah which shelters the sacred shrine, the Kaaba. On one side of the Kaaba is the black stone believed to have been given to Abraham by Archangel Gabriel. This shrine is the place of pilgrimage for Muslims the world over.

Saudi Arabia is an absolute monarchy, with no parliament.

Saudi Arabia has great oil wealth and is the foremost exporter of petroleum products today. The income from oil forms the major source of public revenue. All the same, Saudi Arabia remains an agricultural country whose main products are dates, wheat, barley, fruit, hides and wool.

Head of State & Govt: King Fahd Ibn Abdel Aziz al Said.

Mission in India: Embassy of Saudi Arabia, S-347, Panchshila Park, New Delhi-110 017. Tel: 665419.

Consulate: Bombay— Jolly Chamber No 11, 12th Floor, Nariman Point.

SENEGAL

Cap: Dakar; **Area:** 196,162 sq.km; **Pop:** 6352000; **Lang:** French and native tongues; **Rel:** Muslim and Tribal; **Currency:** Franc CFA. French F1=50 FCFA.

Senegal lies on the West African bulge. It is bounded on the north by Mauritania, on the east by Mali and on the south by Guinea and

Guinea-Bissau. In the southern part of the country, Gambia forms a narrow enclave extending some 200 miles into the interior.

Formerly a French colony, Senegal became a self-governing republic in 1960.

Agriculture and livestock are the chief occupations. There are important deposits of iron ore and phosphate. Developing industries include food processing, chemicals and textiles.

President: Abdou Diouf.

SEYCHELLES

Cap: Victoria; **Area:** 308 sq.km; **Pop:** 64718; **Lang:** Creole and French; **Rel:** Christian; **Currency:** Rupee. US $1=7.62 Rupees.

Seychelles forms a group of lovely islands, in western Indian Ocean. The principal island is Mahe on which the capital Victoria is situated. The group consists of some 92 islands, of which 45 are coralline and the rest granitic. Seychelles became an independent republic in 1976.

Seychelles was entirely uninhabited when the French established settlements there in 1770.

The population of Seychelles is of mixed origin, a unique blend of European, African, Indian and Chinese races. The Seychelles have evolved a mixed language, which may be called Creole. Coconuts take the pride of place among agricultural products. Cinnamon is the next major crop and export. Other crops like tea and lime are also grown. Fishing is another major occupation. Tuna, mullet, mackerel, sardines and shell fish abound in the offshore waters.

President: France Albert Rene.

SIERRA LEONE

Cap: Freetown; **Area:** 71.740 sq.km; **Pop:** 3536000; **Lang:** English and Tribal; **Rel:** Tribal; **Currency:** Leone. US $1=6 Leone.

Sierra Leone (meaning mountain of the lion) was the name originally given to this area by Portuguese sailors mainly on account of the thunder-storms around its coastal peaks. It lies on the West African bulge, between Guinea and Liberia.

Formerly under British rule, Sierra Leone became independent in 1961.

The economy is based on agriculture and mining. Principal products are industrial diamonds, iron ore, bauxite, kola nuts, palm kernel, cocoa and coffee.

President: Maj. Gen. Joseph Saidu Momoh.

SINGAPORE

Cap: Singapore city; **Area:** 616.3 sq.km; **Pop:** 2540000; **Lang:** Malay, Chinese, Tamil and English; **Rel:** Buddhist, Hindu, Muslim, Christian and Taoist; **Currency:** Dollar. US $1=2.28 Dollars.

Singapore is a small island with some 54 outlying islets situated at the southern tip of the Malay Peninsula, to which it is linked by a causeway. The island is about 41.84 km in length and 22.53 km in breadth.

The population of Singapore is composite The Chinese comprise 76.5% and Malays 14.8 and Indians 6.4%.

In August 1965 Singapore became an independent Republic.

The country is an entrepot for Malaysia and other southeast Asian states. The chief exports are rubber and tin. Industries include tin smelting, rubber goods, lumber working and ship-building, textiles and electronics.

President: Wee Kim Wee, **P.M:** Lee Kuan Yew.

Mission in India: High Commission of Singapore, E6, Chandragupta Marg, Chanakyapuri, New Delhi-110 021. Tel: 604162.

SOLOMON ISLANDS

Cap: Honiara; **Area:** 29.758 sq.km; **Pop:** 258193; **Lang:** English and Pidgin; **Rel:** Christian; **Currency:** Solomon island Dollar (S1$). US $1=1.44 S1$.

The Solomon Islands are in the South West Pacific and lie to the east of Papua Guinea. Originally a British Protectorate, it achieved independence in 1978.

The population is predominantly Melanesian. Copra is the main cash crop and rice the chief food crop. Fish is a vital element in food and an export item.

Gov. Gen: Sir Baddeley Devisi. **P.M:** Peter Kenilorea.

SOMALIA

Cap: Mogadishu; **Area:** 637,657 sq.km; **Pop:** 7.5 million; **Lang:** Somalia and Arabic; **Rel:** Islam; **Currency:** Somali Shilling. US $1=36.60 Som. Shilling.

A republic on the east coast of Africa, Somali Democratic Republic is bounded by the Gulf of Aden on the north, the Indian Ocean on the east, Kenya, Ethiopia and Dijibouti on the west.

The Somali Republic was formed by the union of the former Italian Somaliland and the British Somaliland on July 1, 1960.

Somalia is an agricultural country. But out of 8.2 m. hectares of fertile land only 7 m. hectares are cultivated. Has 40.1 m. livestock.

President: Maj. Gen. Mohammed Ziyad Barre.

Mission in India: Embassy of Somalia, Democratic Republic, 12-A, Golf Links, New Delhi- 110 003. Tel: 619559.

SOUTH AFRICA

Cap: Cape Town; **Area:** 1,221,037 sq.km; **Pop:** 31586000; **Lang:** Afrikaans and English; **Rel:** Christian; **Currency:** Rand. US $1=2.06.

The Republic of South Africa lies at the southern tip of the continent of Africa. Namibia and Botswana lie in the north and Mozambique in the NE, and Swaziland in the east. S. Africa includes the original white colonies of the Cape of Good Hope, Natal, Transvaal and Orange Free State. Formerly known as the Union of South Africa, it became a republic after leaving the Commonwealth in March 1960.

The major agricultural products are cotton, wheat, tobacco, sugarcane and citrus fruits. With vast mineral resources, South Africa is the biggest gold and diamond producing country in the world and one of the biggest in uranium. About 47 per cent of the world's total production of gold is from South Africa. Other minerals include coal, copper, tin, manganese, iron, lead and chrome. Manufacturing industries include heavy engineering, chemicals, textiles and food processing.

The country follows a policy of *Apartheid*, the separate development of racial groups. Under the Bantu Home lands constitution Act of 1971, self-government has been given to Transkei, Bophuthatswana, Venda and Ciskei.

No country in the world has recognised these states as independent entities. Nevertheless the show goes on.

President: Marais Viljoen. **P.M:** Pieter Wilhelm Botha.

SPAIN

Cap: Madrid; **Area:** 5,04,750 sq.km. **Pop:** 3,87,17,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Peseta. US$1=190 Pesetas.

Spain is bounded on the north by France and the Bay of Biscay and on the west by Portugal. To the east is the Mediterranean.

With the discovery of America for Spain by Columbus in 1492, Spain became a great colonial empire. After the defeat of the Spanish Armada by England in 1588, Spain shrunk into a minor continental power. In 1939, it passed under the dictatorship of Gen. Franco. On Franco's death in 1975 Spain became a constitutional monarchy.

Traditionally an agricultural country, Spain's main products are cereals, vegetables and fruits. Industries include chemicals, machine tools and ship-building.

Head of State: King Juan Carlos. **P.M :** Felipe Gonzales Marquez.

Mission in India: Embassy of Spain, 12 Prithviraj Road, New Delhi-110 011. Tel: 3015892.

Consulate: Bombay– 6, K-Dubash Marg.

Calcutta: No.1, Taratolla Road, Garden Reach, Calcutta-700 024. Tel: 45-5771.

Madras: Lovedale' 8, Nimmo Road, San Thome. Tele: 72008.

SRI LANKA

Cap: Sri Jayewardenepura; **Area:** 65,610 sq.km.; **Pop:** 1,60,76,000; **Lang:** Sinhala and Tamil; **Rel:** Buddhist, Hindu, Islam and Christian; **Currency:** Rupee. US$1=27.45.

Sri Lanka, is an island, separated from India by the shallow Palk Strait. It is bounded on the west by the Palk Strait and the Gulf of Mannar, on the north and east by the Bay of Bengal and on the south by the Indian Ocean.

Sri Lanka became independent in 1948 as a member of the Commonwealth. 1985 saw bloody confrontation between northern Tamilians seeking a separate province and government.

Sri Lanka's major products are agricultural–tea, rubber and coconuts. The commercially important mineral is graphite. There are deposits of iron ore, monazite, ilmenite, limestone, clay and kaolin. Industries include cement, textiles and fertilizers. Sri Lanka embarked on a programme of economic reconstruction in which the harnessing of the Mahawali river for irrigation and hydel power, a housing construction programme, an Investment Promotion zone, etc. are important features.

President: J. R. Jayawardene. **P.M** : Ranasinghe Premadasa.

Mission in India: High Commission of Sri Lanka, 27 Kautilya Marg, Chanakyapuri, New Delhi-110 021. Tel: 370201.

Consulate:Bombay– Sri Lanka Home, 34 Homi Modi Street.

Dy. High Commissioner, Madras: 9-D Nawab Habibullah Ave, Anderson Road.

ST. KITTS-NEVIS

Cap: Basseterre; **Area:** 269 sq.km.; **Pop:** 44,109; **Lang:** English and Patois; **Rel:** Christian; **Currency:** Dollar.

St. Christopher (Kitts)-Nevis is two islands in East Caribbean separated by a narrow channel 2 miles wide. The islands were given the status of an Associate State with Britain in 1967 and became independent on Sept. 18, 1983. At that time Anguilla was part of St. Kitts-Nevis. The Anguillans revolted against this arrangement and Anguilla was separated. (see *Dependencies* infra)

The population is mostly black. The economy is agricultural, sea island cotton and sugar cane being the principal crops.

Gov. Gen: Sir Clement Athelston Arrindell. **P.M** : Dr. Kennedy Alphonse Simmonds.

ST. LUCIA

Cap: Castries; **Area:** 616 sq.km.; **Pop:** 1,26,800; **Lang:** English and French patois; **Rel:** Christian; **Currency:** Dollar.

St. Lucia, the second largest island in the Windward group, lies to the south of Martinique and to the north of St. Vincent. It became independent on Feb. 22, 1979.

The economy is agricultural, copra, coconut oil, bananas and cocoa being the main export items. Manufactures include plastics, garments and beer.

Gov. Gen : Sir Allen Lewis. **P.M** : John George Melvin Compton.

ST. VINCENT

Cap: Kingstown; **Area:** 389 sq.km.; **Pop:** 1,23,000; **Lang:** English and French Patois; **Rel:** Christian; **Currency:** Dollar.

One of the Windward Islands, west of Barbados, St. Vincent became a British Associate State in 1969 and achieved independence on Oct. 27, 1979.

The population is of mixed origin– European-Negro and Carib-Indian. Bananas, arrowroot, copra, sea island cotton and spices are the main exports. Tourism is important.

Gov. Gen : Sir Sydney Gun-Murro. **P.M** : James Fitz Allen Mitchell.

SUDAN

Cap: Khartoum; **Area:** 25,05,813 sq.km.; **Pop:** 2,09,45,000; **Lang:** Arabic and English; **Rel:** Muslim, Christian and Tribal; **Currency:** Pound. US $1=£S2.50.

A republic of north east Africa, Sudan is bounded by Egypt on the north, the Red Sea and Ethiopia on the east, Kenya in the south east and Uganda and Zaire on the south. Central African Republic and Chad lie to the west. The White Nile flows through the middle of the country and joins the Blue Nile at Khartoum. The Sudanese population consists of Arabs, Negroes and Nubians of mixed Arab and Negro blood. Sudan became an independent state in 1885.

The main agricultural crop sorghum is the country's staple food. Other products include longstaple cotton, sesame, peanuts, dates, hides and skins, chillies, beans and corn. Sudan is the world's principal source of gum Arabic. Rice, peanuts, coffee, sugar cane and tobacco are expanding items of agricultural production. Sudan's mineral wealth includes copper, gold, iron, manganese and magnesite.

Oil was struck recently in the Sudan.

Head of Sovereignty Council: Ahmed el Mirghani; **P.M** : Sadiq el-Mehdi.

Mission in India: Embassy of Sudan, M14, South Extension 11, New Delhi-110 049. Tel: 660434.

SURINAME

Cap: Paramaribo; **Area:** 1,63,265 sq.km; **Pop**: 3,52,000; **Lang**: Dutch and English; **Rel:** Muslim and Christian; **Currency:** Guilder US $1=1.78 Guilders.

Suriname, formerly Dutch Guiana, lies on the north east coast of South America. It shares its frontiers with French Guiana in the east, Brazil in the south and the Republic of Guyana in the west. The Atlantic Ocean (Caribbean Sea) bounds, it on the north. It became independent in 1975.

The population comprises a medley of ethnic strains–Negroes, Chinese, East Indians and Indonesians. Mulattoes (of mixed European and East Indian parentage), Amer-Indians and Europeans form 40 per cent of the population.

Much of the land is given to rice cultivation. The country is rich in minerals. It is the second biggest producer of bauxite in the world. Bauxite, alumina and aluminium constitute nearly 90 per cent of the exports.

Chairman, National Military Council: Lt. Col. Deysi Bouterse. **P.M.**: Henk Chin A Sen.

SWAZILAND

Cap: Mbabane; **Area:** 17,363 sq.km; **Pop:** 6,30,000 **Lang:** English and si-Swati; **Rel:** Christian and Tribal. **Currency:** Emalangeui. US $1 = 2.06 Emalangeui.

Swaziland is surrounded almost entirely by South Africa. Mozambique to the east is its only other neighbour.

Swaziland, formerly a British protectorate, attained independence on Sept. 6, 1968.

Sugar is the principal item in the economy, with citrus fruits, cotton, rice and maize, coming next. But the main wealth of the Swazis is cattle. There are considerable mineral reserves, especially, asbestos, iron and coal.

Head of State: King Mswati III Sofia Dlamini.

SWEDEN

Cap: Stockholm; **Area:** 4,49,793 sq.km ; **Pop:** 82,84,000; **Lang:** Swedish; **Rel:** Christian; **Currency:** Krona. US$1=9.69 Krona.

Sweden is the largest of the Nordic countries and in terms of area, the fourth largest country in Europe. To the west, the Scandinavian mountain range divides Sweden from Norway. To the northeast, a shorter range separates Sweden from Finland. Otherwise, Sweden is surrounded by water– Baltic Sea and the North Sea. Sweden has been a constitutional monarchy since 1434.

Sweden has rich natural supplies of coniferous forest, water power, iron ore, uranium and other minerals but lacks significant oil and coal deposits.

The country is highly industrialised. Today about 40 per cent of the country's industrial production is exported. Swedish steel is especially reputed for tool making. Sweden is one of the greatest producers of wood pulp paper and lumber.

Head of State: King Carl XVI Gustav. **P.M.**: Ingvar Carlson.

Mission in India: Embassy of Sweden, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 604961.

Consulate: Bombay – Indian Mercantile Chambers, Nicol Road, Ballard Estate.

Calcutta: C/o. M/s. Flakt India Ltd., Mahohtala, Jal Khuna, W. Bengal.

Madras: Hon. Consul, 6, Cathedral Road, Madras-600 086.

SWITZERLAND

Cap: Berne; **Area:** 41,293 sq.km.; **Pop:** 65,05,000; **Lang:** German, French, Italian and Romansch; **Rel:** Christian; **Currency:** Franc. US $1=1.85 Francs.

Switzerland, a Confederation in Central Europe, is bounded by France, Germany, Austria, and Italy. It is a mountainous country, with the Alpine ranges rising from its bosom. The country is famous for its lakes.

Since 1291 Switzerland has remained a completely independent country. It is a multi-lingual state with most people talking more than one language.

The Swiss terrain offers little scope for farming. Nevertheless, a number of small efficient farms operate and keep the farming community going. The emphasis is on livestock and dairying. Forests help by providing plenty of wood. From the earliest times Switzerland had been famous for its cottage industries–high quality products but no large-scale production.

Swiss-made watches and clocks are

Swiss vote to stay out of UN

Swiss voters in a national referendum in March, 1986' overwhelmingly rejected their country's entry into the United Nations.

Results from more than half of the 26 voting districts showed a "no" verdict, with a massive rejection of membership in some areas.

Around four million Swiss took part in the referendum, required under the country's system on direct democracy.

Both the government and the majority in parliament were in favour of U.N. membership, arguing that Switzerland, as one of the world's oldest democracies, can no longer remain outside.

The Swiss government fears nonmembership could lead to increased isolation in world politics.

famous the world over. Precision tools and machines form another specialised industry. The availability of electric power in every cottage has fostered growth of all kinds of small industries throughout Switzerland. Tourism is the third most paying industry. India has always been one of the major recipients of Swiss assistance, specially in the areas of cattle breeding, rural development, vocational training and in various fields of applied research.

President of the Confederation for 1987: Pierre Aubert.

Mission in India: Embassy of Switzerland, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 604225.

Consulate: Bombay- Menek Mahal, 7th Floor, 90 Vir Nariman Road. Tel: 2043550.

SYRIA

Cap: Damasucs; **Area:** 1,85,180; sq.km.; **Pop:** 1,01,89,000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Pound. US $1=£Syr 8.50.

The Syrian Arab Republic in the middle east lies in between Turkey, Iraq, Jordan, Palestine and Lebanon. The Mediterranean Sea is on the west. The Orontes and Euphrates rivers pass through Syria. The chief seaport is Latakia and Tartous.

Syria, the seat of an ancient civilization became a fully independent sovereign republic in 1946.

Agriculture and cattle-breeding comprise the major occupations of the people. The chief crops are cotton, wheat, tobacco and olives. The only mineral found is oil. Industries include oils, soap, textiles, leather and tobacco.

President: Lt. Gen. Hafez al-Assad. **P.M** : Abdel Raouf al-Kassem.

Mission in India: Embassy of Syrian Arab Republic, 28 Vasant Marg, Vasant Vihar, New Delhi-110 057. Tel: 670233.

Consulate: Bombay– 3rd Floor, Cambatta Building, Sir Jamshedji Tata Road.

TAIWAN

Cap: Taipei; **Area:** 35,981 sq.km.; **Pop:** 1,88,00,000; **Lang:** Mandarin Chinese; **Rel:** Buddhist and Confucian; **Currency:** New Taiwan Dollar. US $1=NT $39.28.

Taiwan, formerly known as Formosa, includes not only Taiwan proper, but also a number of small islands.

Originally Taiwan, and adjoining areas were Chinese territory. In 1950 Chiang Kai Shek made Taiwan the headquarters of the Nationalist Republic of China. Although Taiwan still claims to be the legal government of all China it lost its membership in the UN and its permanent seat in the Security Council to Communist China in 1971.

The main agricultural products are rice, tea, sugar, sweet potatoes, ramie, jute and turmeric. Camphor secured from forests is a governmental monopoly. Industries comprise cotton fabrics and electrical goods, iron works, glass and soap. Coal, marble, petroleum and natural gas are the principal minerals.

President: Chiang Ching-Kuo; **P.M** : Yu Kuo-hua.

TANZANIA

Cap: Dar-es-Salam; **Area:** 9,45,087 sq.km.; **Pop:** 2,17,10,000; **Lang:** Kiswahili and English; **Rel:** Christian and Muslim; **Currency:** Shilling. US$1=Sh.18.50.

Tanzania consists of Tanganyika and the islands of Zanzibar and Pemba. Tanganyika is situated in East Africa and lies in between

Uganda, Kenya, Mozambique, Malawi and Zambia. Zaire is on the west and the Indian Ocean is on the east. The islands of Zanzibar, Pemba, Lamu, Menda, Patta and Siu are about 40 km off the coast north of Dar-es-Salam.

In April 1964, the People's Republic of Zanzibar and Pemba and the Republic of Tanganyika merged to form the United Republic of Tanzania.

The economy is agricultural. The chief cash crops are sisal, sugar, cotton and coffee. Cloves are grown on the islands, chiefly on Pemba. Livestock is extensively raised. Diamonds are an important export. Other minerals include gold, tin and salt.

Head of State: Ali Hassan Mwinyi. **P.M :** Salim Ahmed.

Mission in India: High Commission of Tanzania, 27 Golf Links, New Delhi-110 003. Tel: 694351.

THAILAND

Cap: Bangkok; **Area:** 542,373 sq. km; **Pop:** 50584000; **Lang:** Thai; **Rel:** Buddhism and Islam; **Currency:** Baht. US$1=28.25 Bahts.

Thailand, formerly known as Siam, is a constitutional monarchy in southeast Asia and has for its neighbours, Burma, Laos and Kampuchea. The Gulf of Siam lies to the south.

Thailand, an ancient autocracy, became a constitutional monarchy in 1932. In 1948 the country assumed its present name Thailand.

Agriculture is the mainstay of the country and engages 60 per cent of the population. The chief crop is rice, much of which is exported. Coconuts, tobacco, cotton and teak are other items of agricultural exports. During the last decade Thailand increased her export of manufactured and processed items. Minerals include tin, manganese, tungsten, antimony, lignite and lead.

Head of State: King Bhumibol Adulyadej Abuldet. **PM:** Prem Tinsulanonda.

Mission in India: Embassy of Thailand, 56-N, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 605679.

Consulate: Bombay—'Paresh' 6th Floor, 4A Bhulabhai Desai Road.

Calcutta: 18 B Mandoville Gardens, Calcutta-700 019. Tel: 46-0836.

TOGO

Cap: Lome; **Area:** 56,600 sq. km; **Pop:** 2838000; **Lang:** French (official) and Tribal; **Rel:** Tribal and Christian; **Currency:** Franc CFA. US$1=523.75 FCFA.

The Republic of Togo, formerly Togoland, lies on the west coast of Africa forming a narrow strip stretching from the Gulf of Guinea north to Burkina Faso with Ghana to the west and Benin to the east. Togo became independent in 1960.

The principal products are coffee, cocoa, cotton, palm kernels, kapok and groundnuts. Togo's considerable natural resources are still largely undeveloped but phosphates are being mined in increasing quantities, and now form the country's principal export.

President: Gen. Gnassingbe Eyadema.

TONGA

Cap: Nuku'alofa; Area: 748 sq. km; **Pop:** 98750; **Lang:** English and Tongan; **Rel:** Christian; **Currency:** Paanga. US$1=1.47 Paanga.

Tonga consists of 169 islands and islets in the south western Pacific Ocean. The Tropic of Capricorn and the International Date Line cross each other very near Tonga.

Tonga became a British-protected state in 1900 and independent state on June 4, 1970.

Tonga is an agricultural country. Vegetables and fruits are grown for local consumption. The most important export crop is copra; next come bananas.

Head of State: King Taufaahu Topou IV. **PM:** Prince Fatafehi Tuipelehake.

Mission in India: Consulate of Tonga, C/o. G.P. (P) Ltd., 17, Chittaranjan Ave, Calcutta-700 072. Tel: 27-3568.

TRINIDAD AND TOBAGO

Cap: Port-of-Spain; **Area:** 5128 sq. km; **Pop:** 1105000; **Lang:** English; **Rel:** Christian; **Currency:** Tri & Tob Dollar. US$1=TT$2.40.

Trinidad, the second largest and most southerly of the West Indian Islands (south of Windward Isles) lies very near the north coast of South America. Attached to it for administrative purposes is the island of Tobago. Tobago is often called Robinson Crusoe Island in the belief that this was the island on which Crusoe was stranded. It is just 20 miles from Trinidad. Tobago is famous for its rich avian fauna.

Formerly a British Colony, Trinidad & Tobago achieved independence in 1962 and assumed republican status in 1976.

Industries include oil processing, manufactured goods and tourism. Chief crops are sugar, citrus fruit and cocoa.

President: Ellis Emmanuel Innocent Clarke, **P.M:** George Chambers.

Mission in India: High Commission of Trinidad and Tobago, 131 Jor Bagh, New Delhi-110 003. Tel: 618186.

TUNISIA

Cap: Tunis; **Area:** 164,150 sq. km; **Pop:** 6966173; **Lang:** Arabic (official) and French; **Rel:** Islam; **Currency:** Dinar, US$1=0.750 Dinar.

A republic of North Africa, lying on the Mediterranean coast, Tunisia is bounded by Algeria on the west and Libya on the east.

Formerly a French protectorate, Tunisia became autonomous in 1955, and assumed republican status in 1957.

Tunisia is an agricultural country, and produces wheat, barley, oats, dates, olives, apricots, almonds, figs, peaches, vegetables and alfa grass. The chief minerals are phosphates, iron, lead and zinc. The principal exports are olive oil, wine, phosphates and grains.

President: Habib Ben Ali Bourgiba. **PM:** Richard Sfar.

Mission in India: Embassy of Tunisia, 23-Palam Marg, Vasant Vihar, New Delhi-110 057. Tel: 676204.

TURKEY

Cap: Ankara; **Area:** 779,452 sq. km; **Pop:** 50.1 m.; **Lang:** Turkish; **Rel:** Secular, main religion: Islam; **Currency:** Lira. US$1=600 TL.

A republic of south eastern Europe and Asia Minor, Turkey is bounded by the Aegean Sea, the Black Sea, the USSR, Iran, Iraq, Syria, the Mediterranean Sea, Greece and Bulgaria. Turkey occupies a strategic position, linking as it does Asia and Europe at the Straits of Bosporus, between the Mediterranean and the Black Sea. The major portion of Turkey lies in Asia Minor.

Asiatic Turkey, that is, Anatolia, was the seat of one of the earliest civilizations known. Istanbul, the present capital, was first known as Byzantium and then as Constantinople. The Ottoman Turks conquered Constantinople in 1453 and founded a Turkish Empire. In 1923 Turkey became a republic.

Agriculture maintains about 64 per cent of the population. The chief products are tobacco, wheat, cotton, olive oil and sugar. Turkey is the world's second largest producer of sultana raisins. Sheep and cattle abound in the plateau of Anatolia and provide mohair for which Turkey is famous. The main minerals are iron ore, copper, chromium, bauxite and coal.

President: Gen. Kenan Evren, **PM:** Turgut Ozal.

Mission is India: Embassy of Turkey, Plot 14, No. 50, Nyaya Marg, Chanakyapuri, New Delhi-110 021. Tel: 601921.

Consulate: Bomaby—Mittal Court, C Wing, 10th Floor, Room No. 105, Nariman Point.

Consulate General: 2 Nazar Ali Law, Calcutta-700 029. Tel: 44-5605.

Madras: 18/19, Bawa Rowther Road, Alwarpet, Madras-600 018. Tel: 72219.

TUVALU

Cap: Funafuti; **Area:** 26 sq. km; **Pop:** 7349; **Lang:** Tuvaluan, English; **Rel:** Christian; **Currency:** Dollar.

Formerly known as the Ellice Islands, Tuvalu is a scattered group of nine small atolls in the Western Pacific Ocean, north of Fiji and east of Solomon Islands. It became independent in 1975 under the name Tuvalu.

The poor quality of the soil permits subsistence farming of coconuts only. Copra and postage stamps are the main foreign exchange earners.

Gov. Gem: Sir Fiatau Penitala Teo, **PM:** Dr. Tomasi Puapua.

UGANDA

Cap: Kampala; **Area:** 241,139 sq. km; **Pop:** 15150000; **Lang:** English and Luganda; **Rel:** Tribal and Muslim; **Currency:** Uganda Shilling. US$1=565 U. Shillings.

Uganda, an equatorial state in East Africa, is bounded by the Sudan on the north, Zaire in the west, Rwanda and Tanzania on the south and Kenya on the east.

Formerly a British protectorate, Uganda became independent in 1962 and a republic in 1963. A military coup led by Lt. Gen. Tito Okello ousted Milton Obote's Govt. in 1985. Milton Obote had himself come to power after ousting dictator Idi Amin in 1979.

The economy is agricultural. Main products are cotton and coffee. Tea, sugar, vegetable oils, oil seeds, hides, skins and tobacco are exported. Copper is the chief mineral.

President: Yoweri Museveni; **P.M** : Samson Kesekka.

Mission in India: High Commission of Uganda, 61 Golf Links, New Delhi-110 003. Tel: 693584.

UNITED ARAB EMIRATES

Cap: Abu Dhabi; **Area:** 82,880 sq. km; **Pop:** 1255000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Dirham, US$1=3.68 Dirham.

The United Arab Emirates consist of seven Sheikdoms in the Persian Gulf—Abu Dhabi, Dubai, Sharjah, Umm al Quwain, Ajman, Fujairah and Ras al Khaimah. The first six Sheikdoms signed the Union agreement on 2nd Dec. 1971. Ras al Khaimah joined the Union only in February 1972.

Abu Dhabi, which is the capital of the Union, is the largest of the Emirates in area. Dubai is the main port of the Union and now has the largest harbour in the Middle East. The economy of UAE is almost entirely dependent on oil.

President: Sheik Zaid bin Sultan al Nahayan (of Abu Dhabi). **PM:** Sheik Rashid bin Said al-Maktoum (of Dubai).

Mission in India: Embassy of UAE, A-7, West-End Colony, Rao Tula Ram Marg, New Delhi-110 021. Tel: 670830.

Consulate: Bombay—Bungalow No. 7, Jolly Maker Apartment, Cuffe Parade, Colaba.

UNITED KINGDOM

Cap: London; **Area:** 244,108 sq. km; **Pop:** 55624000; **Lang:** English; **Rel:** Christian; **Currency:** Pound Sterling. £1=US$1.07.

A constitutional monarchy, the United Kingdom comprises the island of Great Britain and Northern Ireland, together with many small islands. It is separated from the coast of Western Europe by the English Channel to the south and by the North Sea to the east. The northern and western shores are washed by the Atlantic Ocean.

Uganda: Monthly Salary Rs. 15!

Uganda, the land torn between incessant civil strifes ever since the ouster of Idi Amin and later Milton Obote, is pauperised. Yoweri Museveni and his National Resistance Army took power there in early 1986.

Poverty is rampant. The minimum monthly salary for a wage earner is fixed at 6000 shillings a month or about $ 1.20 (about Rs. 15).

A University Professor earns slightly more than $ 20 (about Rs. 250) a month, the maximum salary someone employed by the state can earn.

The cost of living particularly in urban areas strips the average worker's earnings. A large bunch of plantains, a staple of Ugandan diet, costs more than 15,000 shillings, or about $ 3 (about Rs. 37.5). Coffee is the only foregin exchange earner for Uganda. But Ugandan coffee farmers receive about 10 percent of the world price for coffee, whereas the neighbouring Kenyans are receiving 80 percent. As a result, tons of coffee are being smuggled across the border to Kenya to fetch higher prices.

—New York Times.

Great Britain: is the largest of the islands forming the United Kingdom. It comprises England, Scotland, Wales, the Isle of Man and the Channel Islands. St. George's Channel and Irish Sea lie between the UK and Ireland. Britain is much less than half the size of France or Germany and would fit forty times into the Unitd States of America. Yet, for hundreds of years this island has been a world power. From its shores men set out to lay the foundation of what is now the United States of America, to develop Canada, Australia, New Zealand, the Indian continent and great areas of Africa. British institutions and methods of government have set the pattern for lovers of freedom everywhere. And today, Britain's Queen is Head of a family of several million people, spread all over the world.

Great Britian is a constitutional monarchy.

The sovereign is the Head of State and monarchy is hereditary. Actual power is vested in Parliament which is the supreme legislative body in Great Britain. The Parliament consists of two houses— the House of Lords and the House of Commons.

Britain is one of the world's leading industrial and exporting countries. Chief industries are iron and steel, engineering, chemicals, electronics, motor vehicles, aircraft, textiles, cloth and other consumer goods. Its coal mines yield about 128 million tons annually. Although Britain's agriculture and trawler-fishing are highly mechanised, half of the country's food supplies and most of its raw materials are imported. North sea oil is a lately added boon to British economy.

Northern Ireland: is situated in the north-east of Ireland and forms part of the United Kingdom. It comprises six Ulster counties of Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone. The rest of the island forms the Republic of Ireland. Northern Ireland has been rocked by bloody agitation for union with Catholic Irish Republic. 1985 saw an Anglo-Irish agreement which for the first time gave Dublim a say in the running of the province.

Agriculture is the main occupation in Northern Ireland. Cattle, sheep, hogs, eggs, poultry, potatoes and milk are the important products. Linen, ropes, twines, rayon, clothing, tobacco, aircraft and shipping form the main branches of industry.

Head of State: Queen Elizabeth II, **PM:** Mrs. Margaret Thatcher.

Mission in India: British High Commission, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 601371.

Consulates: Bombay—Hong Kong Bank Building, M.G. Road.

Calcutta: 1, Ho Chi Minh Sarani, Calcutta-16. Tel: 44-5171.

Madras: Hon. Consul, 24, Anderson Road, Madras-600 006. Tel: 473136.

USA

Cap: Washington D.C; **Area:** 93,72,614 sq.km.; **Pop:** 22,65,47,346; **Lang:** English; **Rel:** Christian; **Currency:** Dollar.

The United States of America is a federal republic composed of 50 states, of which all except one–Hawaii islands–are in mainland America.

States of the Union

Name	Capital	Area (Sq km)	Population (1980)
Alabama (AL)*	Montgomery	133916	3893888
Alaska (AK)	Juneau	1530700	401851
Arizona (AZ)	Phoenix	295260	2718425
Arkansas (AR)	Little Rock	137754	2286435
California (CA)	Sacramento	411049	23667565
Colorado (CO)	Denver	269596	2889735
Connecticut (CT)	Hartford	12997	3107576
Delaware (DE)	Dover	5294	594317
District of Columbia (DC)	Washington D.C.	179	638432
Florida (FL)	Tallahassee	151940	9746342
Georgia (GA)	Atlanta	152577	5463105
Hawaii (HI)	Honolulu	16760	964691
Idaho (ID)	Boise	216431	944038
Illinois (IL)	Springfield	145934	11426596
Indiana (IN)	Indianapolis	93719	5490260
Iowa (IA)	Des-Moines	145752	2913808
Kansas (KS)	Topeka	213097	2364236
Kentucky (KY)	Frankfort	104659	3660257
Louisiana (LA)	Baton Rouge	123678	4206312
Maine (ME)	Augusta	86156	1125027
Maryland (MD)	Annapolis	27091	4216975
Massachusetts (MA)	Boston	21456	5737037
Michigan (MI)	Lansing	151585	9262078
Minnesota (MN)	St. Paul	218601	4075970
Mississippi (MS)	Jackson	123515	2520638
Missouri (MO)	Jefferson city	180515	4916759
Montana (MT)	Helena	380849	786690
Nebraska (NE)	Lincoln	200349	1569825
Nevada (NV)	Carson City	286353	800493
NewHampshire (NH)	Concord	24033	920610
New Jersey (NJ)	Trenton	20168	7364823
New Mexico (NM)	Santa Fe	314923	1302981
New York (NY)	Albany	127190	17558072
North Carolina (NC)	Raleigh	136413	5881813
North Dakota (ND)	Bismarck	183118	652717
Ohio (OH)	Columbus	107045	10797624
Oklahoma (OK)	Oklahoma City	181186	3025290
Oregon (OR)	Salem	251419	2633149
Pennsylvania (PA)	Harrisburg	117348	11863895
Rhode Island (RI)	Providence	3139	947154
South Carolina (SC)	Columbia	80583	3121833
South Dakota (SD)	Pierre	199730	690768
Tennessee (TN)	Nashville	109153	4591120
Texas (TX)	Austin	691030	14229288
Utah (UT)	Salt Lake City	219888	1461037
Vermont (VT)	Montpelier	24900	511456
Virginia (VA)	Richmond	105587	5346818
Wahington (WA)	Olympia	176480	4132180
West Virginia (WV)	Charleston	62758	1950279
Wisconsin (WI)	Madison	145436	4705521
Wyoming (WY)	Cheyenne	253325	469557

* Postal two-letter (both capitals) abbreviations for U.S states were introduced with the ZIP Code in 1963. These are fast replacing the older abbreviations.

General Motors: World's Largest

America's General Motors Corporation is the largest industrial house in the world. According to the list of world's top 50 prepared by 'Fortune' Magazine, Exxon Corporation, also of the US, which led the list in 1984, ranked second due to a five per cent sales drop.

Royal Dutch/Shell Group fell to the third from the second.

Kuwait Petroleum Corporation fell to 48th from 37th. Nippon Oil and Petroleos de Venezuela disappeared from the list. Six out of the top ten concerns were petroleum refining firms.

The list included 21 U.S. companies.

American firms captured eight out of the top ten firms on the list in terms of sales. Chevron Corporation rose to ninth from 13th.

South Korean firms joined the list for the first time since the magazine started making the rankings of the world's top 50 firms in 1974. They were Samsung Group, 42nd and Hyundai Group 44th.

Five Japanese firms were listed among the top 50 with Toyota Motor rising to 15th position from 16th.

** ** **

Japanese companies continued to lead Fortune's annual list of the world's 500 largest industrial firms outside the U.S. The list, based on sales in 1985, included 147 Japanese firms, a drop of three from 150 in the previous year. The decrease was the first in five years.

The number of South Korean firms on the list remained unchanged at 10. However, their combined sales leaped 17 per cent far exceeding the five per cent increase of the 147 Japanese firms.

Royal Ductch/Shell Group remained at the top of the lsit for the 30th straight year. Toyota Motor Corporation retained the fourth position. Matsushita Electric Industrial Company rose to seventh from eighth. Hitachi rose to eighth from tenth and Nissan Motor to 12th from 13th.

Dai-lchi Kangyo Bank topped the list of the world's 100 largest banks, excluding U.S. banks, for the third consecutive year in terms of assets. The list was also published by Fortune.

Following Dai-lchi Kangyo, the next four banks on the list were also Japanese – Fuji, Sumitomo, Mitsubishi and Sanwa. This is the second time that Japanese banks took the top five positions. Japan led the list with 30 banks, an increase of one.

Territories and other outlying areas

Place	Area Sq.Km)	Population
Puerto Rico	9104	3187570[1]
Virgin Islands, U.S.	342	95591[1]
Guam	541	105821[1]
American Samoa	199	32395
Canton Island and Enderbury Island	70	0
Midway Islands	5	2256[2]
Wake Island	8	1647[3]
Johnston Island and Sand Island	1.3	378[4]
Northern Mariana Islands	477	16758
Trust Territory of the Pacific Islands	1380	126000

1980 census. [2] 1975 est. [3] 1970 census. [4] 1978 est. [5] 1980 est

The United States of America, which covers the central part of North America, grew out of the British colonies that were established in North America in the first half of the 17th century

USA's participation in the First World War and the victory of the Allies made it a world power. The end of the Second World War saw the emergence of USA as one of the super-powers of the world

The Union originally comprised 13 states, to which 7 were added subsequently. Thirty other states, which were formerly territories were also admitted into the Union as full states, thus making up 50 states in all, apart from the District of Columbia. Each state has its own constitution. The State constitutions provide for a legislature of two Houses (except Nebraska which has only one House). a Governor and a judicial system of its own. The state governments can deal with all matters which are not reserved to the federal legislature. The following table gives the existing states of the Union with their postal abbreviations, capitals, area and population.

President: Ronald Reagan. Vice-president: George Bush.

Mission in India: Embassy of USA, Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 600651.

Consulates: Bombay– Lincoln House, 78 Bhulabhai Desai Road, Bombay-400 026.

Calcutta: 5/1 Ho Chi Minh Sarani, Calcutta-700 071. Tel: 44-3611.

Madras: 220, Annasalai, Madras-600 006. Tel: 473040.

USSR

Cap: Moscow; **Area:** 2,24,00,000 sq.km.; **Pop:** 27,57,61,000; **Lang:** Russian; **Rel:** (see below); **Currency:** Ruble. US $1=0.92 Ruble.

USSR, the largest country in the world in point of area, stretches across the continents of Asia and Europe. The country extends for over 9600 Km from the Baltic Sea to the Pacific Ocean and for 4800 Km from north to south. In the west it reaches the Gulf of Finland in Europe and in the east the North Pacific Ocean in Asia. In the far north east, the Bering strait separates it from Alaska.

The Soviet Union includes within its boundaries 15 Union Republics, 20 Autonomous Republics and 8 Autonomous Regions.

These are the 15 Republics and their capitals: *RSFSR-Moscow; Ukraine-Kiev; Uzbekistan-Tashkent; Kazakhstan-Alma-ata; Belorussia-Minsk; Azerbaijan-Baku; Georgia-Tibilisi; Moldavia-Kishinev; Tadzhikistan-Dushanbe; Kirgizia-Frunze; Lithuania-Vilnius; Armenia-Yerevan; Turkmanisa-Ashkhabad; Latvia-Riga; Estonia-Tallinn.

Modern Babel

Between the Ukrainian language, spoken by 40 million people, and the Eskimo language, mother-tongue of just 1,300 people, there are 161 non-Russian languages spoken in the Soviet Union.

Contrary to western allegations, no language group, however small, has been "assimilated" by Russian, the largest language group, reports APN. For all such groups, Russian is only a "second" language, one which facilitates communication between the numerous nationalities.

Constitution and Government: The Communist party with 19 million members (1986) plays a leading role in government and is the substantial policy-making body. The supreme organ of the party is the Congress which lays down policy and elects the Central Committee. The Central Committee forms the Politbureau and the Secretariat.

Economy: USSR has a planned economy. Planning is based on public ownership in industry and trade and on state and collective or co-operative ownership in agriculture.

Languages: Russian is the dominant language of the Union. Other national languages which number about 130 are also spoken and written.

Religion: All religions including, no-religion, are permitted in the USSR. Separate figures showing the adherents of various faiths are not available.

The new Constitution adopted by the Supreme Soviet of the USSR on the 7th Oct. 1977 spells out "statutory obligations on deputies, enterprises and officials for fulfilment of the electors' mandates".

Union Republics of USSR

Republic	Area sq.km.	Population (million)
Russian SFSR	17075000	142.1
Ukrainian SSR	603700	50.7
Kazakh SSR	2717300	15.6
Uzbek SSR	447400	17.5
Byelorussian SSR	207600	9.9
Azerbaijan SSR	86600	6.5
Georgian SSR	69700	5.2
Moldavian SSR	33700	4.1
Lithuanian SSR	65200	3.5
Kirghiz SSR	198500	3.9
Tadzhik SSR	143100	4.4
Armenian SSR	29800	3.3
Latvian SSR	63700	2.6
Turkmen SSR	488100	3.1
Estonian SSR	45100	1.5

Chairman of the Presidium of the Supreme Soviet (Head of State): Andrei Gromyko. **General Secretary, CPSU, Central Committee:** Mikhail Gorbachev. **P.M :** Nikolai Ryzhkov.

Mission in India: Embassy of the USSR,

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* Russian Federation of Soviet Republics

Shantipath, Chanakyapuri, New Delhi-110 021. Tel: 606026.

Consulate: Bombay– Palm Beach, 42, L. Jagmohandas Marg (Old Nepean Sea Road);

Calcutta: 31, Shakespeare Sarani, Calcutta-700 017. Tel: 44-4982.

Madras: Consulate General, 14, Santhome High Road, Madras-600 004. Tel: 71112.

URUGUAY

Cap: Montevideo; **Area:** 1,76,215 sq.km.; **Pop:** 29,90,000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Nuevo Peso. US$1=90.05 NP

Uruguay is the smallest republic in South America. It lies on the north bank of the estuary of the River Plate with Brazil to the north and Argentina to the west.

Uruguay, once a part of the Spanish Empire and later a province of Brazil, became independent in 1825.

Livestock raising is Uruguay's principal occupation and takes up 60 per cent of its total land area. The chief products are meat, wool, hides, corn, wheat, citrus fruit, rice, tobacco, oats and linseed. Important industries are vinery, meatpacking and textiles.

President: Julio Maria Sanguinetta.

VANUATU

Cap: Villa; **Area:** 14,760 sq. km; **Pop:** 117000; **Lang:** English, Pidgin; **Rel:** Christian; **Currency:** Vatu

New Hebrides became independent under the name Vanuatu on July 1, 1980. It is a double chain of 13 large and 80 small islands in the Pacific. The largest island is the Espiritu Santo. Originally a haunt of European pirates, they came under the control of France and Britain in 1906.

The population is overwhelmingly Melanesian. The major cash crops are copra, coffee and cocoa. Piggery is well developed. Manganese has been mined since 1961 and exported to Japan.

PM: Walter Hadye Lini.

VATICAN CITY STATE

Cap: Vatican City; **Area:** 0.4 sq. km; **Pop:** about 1000; **Lang:** All languages accepted; **Rel:** Christian—Catholic.

Vatican City, the City of the Pope, is an independent sovereign state and includes St Peter's Cathedral, Vatican Palace and Museum, the Vatican Gardens and neighbouring buildings. Vatican has its own railway station, postal system and police.

Gulf Dinar

The Gulf Cooperation Council plans to introduce a "Gulf Dinar" as common currency in all the member States—Bahrain, Saudi Arabia, Qutar, Kuwait, Oman and United Arab Emirates.

At present all these Gulf States have their separate dinar currencies.

The GCC's financial and economic cooperation committee at its recent meeting held in Riyadh in November 1986, discussed the possibility of setting up a Gulf monetary system to bring parity in the foregin exchange regulations before bringing in a common currency the Gulf Dinar.

Highly placed sources is Abu Dhabi said the committee discussed a proposal to create what is called "economic citizenship" favouring the grant of rights to GCC nationals to own shares in joint stock companies in any of the six States and to conduct business anywhere within the Gulf region.

Oman Deputy Prime Minister for Finance and Economy, Qais Bin Abud Munim al Zawawi, who chaired the Riyadh meeting says there were "obstacles" in the way of unified economy in six Gulf States but they were not "basic" and would be overcome as all the States shared the desire to overcome any obstacle.

Supreme Pontiff: Pope John Paul II (Karol Wojtyla). **Secretary of State:** Cardinal Agostino Casaroli.

Mission in India: Apostolic Nunciature, 50-C, Nitimarg, Chanakyapuri, New Delhi-110 021. Tel: 606921.

VENEZUELA

Cap: Caracas; **Area:** 912,050 sq. km; **Pop:** 17819000; **Lang:** Spanish; **Rel:** Christian; **Currency:** Bolivar, US$1=13.40 Bolivar

Venezuela (sixth largest country in South America) is the northernmost state of South America and is surrounded by Guyana, Brazil and Colombia. The Caribbean Sea bounds it on the north. Formerly a Spanish colony, Venezuela (Little Venice) became independent in 1821.

Venezuela is rich in minerals. It is one of the world's leading producers of oil and is a member of the OPEC. Oil prosperity is evident everywhere. Venezuela is rich in diamonds and ranks 8th in world production. Other minerals are iron, steel, aluminium, copper, tin and manganese. Agricultural products include coffee, cocoa, black beans, bananas, maize, rice and sugar

President: Jaime Lusinchi.

Mission in India: Embassy of Venezuela, N-114, Panchashila Park, New Delhi-110 017. Tel: 6436783.

VIETNAM

Cap: Hanoi; **Area:** 329,566 sq. km; **Pop:** 58307000; **Lang:** Vietnamese; **Rel:** Buddhist; **Currency:** Dong. US$1=10.93 Dong.

The Socialist Republic of Vietnam (now comprising former North and South Vietnam) is bordered by China, Laos, Kampuchea and South China Sea.

Vietnam is a mountainous country. Running almost its entire length, is a mountain chain—the Annamite Chain. On one side of the mountain chain is the fertile Red River delta in the north and on the other side is the Mekong delta in the south. The two deltas form the rice bowl of the country.

The country is primarily agricultural. Rice is the dominant crop and an export item. Other crops are rubber, sugarcane, coffee and tea. Minerals include coal, tin, copper, chromium and phosphates in the north. Industries like cememt, metallurgy, chemicals, paper and textiles are found in the south.

Presidium of the Republic Chairman: Truong Chinh **PM:** Phan Van Dong.

Mission in India: Embassy of Vietnam, No. 2, Navjeevan Vihar, New Delhi-110 017. Tel. 669843.

WESTERN SAMOA

Cap: Apia; **Area:** 2835 sq. km; **Pop:** 156349; **Lang:** Samoan and English; **Rel:** Christian: **Currency:** Tala (Dollar), US$1=2.21 Tala.

Western Samoa comprises 4 islands in the South Pacific Ocean, the largest of them being Savaii and Upolu. The International Date Line passes very near to Western Samoa. Eastern Samoa (American Samoa) with its capital at Fagotogo remains a dependency of the USA.

Western Samoa became fully independent on January 1, 1962 and is a member of the Commonwealth.

The economy is mainly agricultural. The chief products are fish, copra, cocoa, bananas, taro, sweet potatoes, bark cloth and mats.

Head of State for life: Malietoa Tanumafili II. **PM:** Tofilau Eti Alesana.

YEMEN (NORTH)

Cap: Sana'a; **Area:** 195,000 sq. km; **Pop:** 8556974; **Lang:** Arabic; **Rel:** Islam; **Currency:** Rial. US$1=6.45 Rial.

The Yemen Arab Republic is in the south west of the Arabian peninsula. It is bounded by South Yemen on the south and east, Saudi Arabia on the north and east and the Red Sea on the west. The Yemen Arab Republic was established on Sep. 27, 1962.

The main agricultural products are coffee, dates, herbs, fruits, millet and maize. Cotton, coffee, hides and skins are exported.

Head of State: Ali Abdullah Saleh, **PM:** Maj. Abdel Aziz Abdel Ghani.

Mission in India: Embassy of Yeman Arab Republic, B-55, Paschimi Marg, Vasant Vihar, New Delhi-110 057. Tel: 674472.

Consulate: Bombay – 102 Maker Towers 'F' 10th Floor, Cuffe Parade.

YEMEN (SOUTH)

Cap: As Shaab (Aden); **Area:** 463,576 sq. km; **Pop:** 2066000; **Lang:** Arabic; **Rel:** Islam; **Currency:** Dinar. US$1=0.343 Dinar.

The People's Democratic Republic of Yemen, (South Yemen) comprises a strategic port (Aden) and a large area of mainly desert teritory on the southern shore of the Arabian peninsula. Its neighbours are North Yemen to the north-west. Saudi Arabia to the north, and Oman to the east. The Gulf of Aden lies to the south.

South Yemen (formerly Aden and the Protectorate of South Arabia) became independent on Nov. 30, 1967.

The economy is chiefly agricultural. The main crops are sorghum, sesame, millets, wheat and barley.

Chariman of the Presidium of the Supeme People's Council: Haider Abubaker l-Attas; **P.M :** Yassen Said Noman.

Mission in India: Embassy of People's emocratic Republic of Yemen, B-70, Greaer Kailash I, New Delhi-110 048. Tel: 414623.

YUGOSLAVIA

ap: Belgrade; **Area:** 255,804 sq. km; **Pop:** 3,123,000. **Lang:** Serbo-Croatian, Slovar nd Macedonian; **Rel:** Christian and Muslim; **urrency:** Dinar.

Yugoslavia, a Balkan state, is made up of ix republics—Serbia, Croatia, Slovenia, Montenegro, Bosnia-Herzegovina and Macedonia. It lies between Italy, Austria, Hungary, Romania, Bulgaria, Greece and Albania with a long seacoast on the Adriatic side.

The modern state of Yugoslavia has grown out of a petty principality Serbia which was ndependent since 1878.

Nearly one-third of Yugoslavia is forest. The chief crops are wheat, maize, and potatoes. The principal minerals are coal, ron, manganese and lead.

President: Sinan Hasani; **PM:** Branko Mikulic.

Mission in India: Embassy of Yugoslavia, 3/50 Niti Marg, Chanakyapuri,. New Delhi-110 021. Tel: 606022.

Trade Commission: Bomaby—Vaswani Mansions, 120/4 Dinsha Wachha Road.

ZAIRE

Cap: Kinshasa; Area: 2,344,885 sq. km; **Pop:** 32084000; **Lang:** French & Kiswahili; **Rel:** Christian & Animist; **Currency:** Zaire. US$1=44.86 Zaire.

The Republic of Zaire was known until Oct. 1971 as the Democratic Republic of the Congo, or Congo (Kinshasa) for short. This change of name distinguished it from its neighbour, the Republic of the Congo or the Congo (Brazzaville). Zaire is surrounded by the Central African Republic, Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, Angola, the Congo and the Atlantic Ocean into which the River Congo drains. In 1971 the country changed the name of River Congo to River Zaire. Originally a Belgian colony, Zaire became independent on June 30, 1960.

The major assets of Zaire are the Katanga copper mines and the diamond deposits in Kasai. The country is rich in other minerals like cobalt, cadmium, manganese, zinc and uranium. The forests abound in high class wood like mahogany, ebony and teak. Principal agricultural products are coffee, palm oil and rubber.

President: Mobutu Sese Seko, **PM:** Kengo Wa Dondo.

Mission in India: Embassy of Zaire, 160 Jor Bagh, New Delhi-110 003. Tel: 619455.

ZAMBIA

Cap: Lusaka; **Area:** 752,620 sq. km; **Pop:** 6445000; **Lang:** Bantu and English; **Rel:** Christian and Muslim; **Currency:** Kwacha. US$1=3.51 Kwacha (after devaluation of Kwacha by 56% in Oct. 1985)

Zambia, a landlocked republic in southern Africa, takes its name from the River Zambezi, one of its biggest rivers. Originally known as Northern Rhodesia, it is separated from Zimbabwe by the Zambezi river. Kariba Dam, one of the biggest man-made dams in the world, is on the Zambezi river where it makes the border between Zambia and Zimbabwe. It is bounded by Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola and Zaire.

Zambia became independent on 24th October 1964 and it is a republic within the Commonwealth.

Principal agricultural products are maize, tobacco, millet, cassava, groundnuts, cotton and sugar.

The country is rich in minerals including copper, zinc, cobalt, lead, uranium and manganese. Although copper mining dominates Zambia's economy, now accounting for 80% of the foreign exchange earnings, the country had made a major shift to agricultural production, as a result of the crippling fluctuations of copper prices in the world market.

President: Kenneth David Kaunda. **PM:** Kebby Silio Kambulu.

Mission in India: High Commission of Zambia, 14 Jor Bagh, New Delhi-110 003. Tel: 619294.

ZIMBABWE

Cap: Harare; **Area:** 390,272 sq. km; **Pop:** 8461000, **Lang:** English, Shona and Ndebela,

Rel: Tribal and Christian; **Currency:** Dollar. US$1=Z$1.65.

Zimbabwe, formerly Southern Rhodesia, lies in south central Africa with Mozambique to the east, Zambia to the north-west, Botswana to the south-west and South Africa to the south. Zimbabwe achieved independence after a bitter struggle against the white minority government in power.

Zimbabwe is rich in minerals notably copper, nickel, gold, asbestos, chrome and coal. The Wankie Colliery is the largest coal mine in the world. Industries include food processing, metals, textiles and engineering. Maize, groundnuts, cotton, and tobacco are the chief crops, tobacco being the most important one.

President: Canaan Banana. **PM:** Robert G. Mugabe.

Mission in India: High Commission for the Republic of Zimbabwe, B-1/42, Safdarjung Enclave, New Delhi-110 029. Tel: 608598.

DEPENDENCIES

All dependencies are remnants of the colonial empires established by European powers. None of them are sovereign. Dependencies listed below are grouped under the following heads: 1. Australia, 2. Britain, 3. Chile, 4. Denmark, 5. Ecuador, 6. France, 7. Netherlands, 8. New Zealand 9. Norway, 10. Portugal, 11. Spain, 12. U.S.A.

1. Australia

Australian Antarctic Territory. Area: 6,442,372 sq. km. A barren wasteland in Antarctica claimed by Australia in 1936.

Christmas Island. Area: 135 sq. km; Pop: 3260. An island in the Indian Ocean which Australia acquired in 1958. It is noted for its phosphate production.

Cocos (Keeling) Islands. Area: 14 sq. km. Pop: 1038; Cap: Bantam. The territory comprising 27 small islands in the Indian Ocean was given to the Clunies-Ross family by Queen Victoria in 1886. Australia bought the islands for 7.2 million dollars in 1978.

Heard and McDonald Islands. Area: 368 sq. km. These islands in the Indian Ocean are uninhabited. They were transferred to Australia by Britain in 1947.

Norfolk Islands: Area: 30 sq. km; Pop: 2287; Cap: Kingston. These islands about 1600 Km from Australia are in the Tasman sea. There had been a settlement since 1856 when the descendants of the Bounty mutineers were transferred there from Pitcairn. (See Pitcairn infra).

2. Britain

Most of the British colonies have acquired Associate status and are no longer treated as dependencies.

Anguilla. Area: 91 sq. km; Pop: 6758; Cap: The Valley. Anguilla is one of the northernmost Caribbean islands. In 1976 Britain granted Anguilla local autonomy, with an elected Assembly. Anguillans have been demanding complete independence. Fishing is the main industry.

British Antarctic Territory. Area: over 100,000 sq. km. This territory comprises South Shetland Islands, South Orkney Islands and a large slice of territory on Palmer Peninsula, in Antarctica. They are mostly uninhabited.

British Indian Ocean Territory. Area: 78 sq. km; Pop: 2000. This territory in the Indian Ocean about 1120 Km south of India covers the Chagos Archipelago. The three main islands in this group are Diego Garcia, Peros Banhos and Salomon. Diego Garcia is a U.S. naval base now.

British Virgin Islands. Area: 153 sq. km; Pop: 12,796; Cap: Road Town. These comprise 36 islands and islets in the Caribbean Sea. It is governed by a crown administrator aided by a local council and a partly elected legislature. Livestock, fishing and farming form the main occupations.

Cayman Islands. Area: 259 sq. km.; Pop: 11,194; Cap: Georgetown. The Cayman Islands in the Caribbean Sea comprise three nain islands—Grand Cayman, Little Cayman nd Cayman Brac. It is governed by an dministrator assisted by a local council and n elected Assembly. The population is olyglot. Tourism is the main industry.

alkland Islands. Area: 11,961 sq. km; Pop: 010; Cap: Stanley. Falklands Crown Colony omprises two principal islands, East Falkand and West Falkland. South Georgia a vhaling settlement and South Sandwich Isands form part of the colony. These islands vere settled at different times by the French, he British and the Argentinians. Argentina till claims these islands, which they call *Malvinas*.

In 1982 Argentina forcibly occupied these slands but they were finally reoccupied by Britain. The islands continue to be a bone of ontention between Argentina and Britain.

Gibraltar. Area: 6 sq. km; Pop: 31,441. The Rock of Gibraltar, known as the key of the Mediterranean, is a peninsula jutting into the Mediterranean from Spain's southwest coast. Both Spain and France have laid claim to it. n 1967, a referendum voted overwhelmingly n favour of British control. This has not atisfied Spain, which still counts Gibraltar as part of its territory.

Hon Kong (see *Independent States)*

Pitcairn Islands. Area: 48 sq. km; Pop: 124; Cap: Adamstown. Pitcairn Islands include Pitcairn proper as well as three uninhabited slands, Henderson, Ducie and Oeno. They re about 1920 Km south of Tahiti. Pitcairn vas located by the mutineers on H.M.S. Bounty, in 1790, when they were looking for n unknown hideout for themselves. They knew that if they were captured by the British navy, they would all be hanged. Therefore, after a sojourn of a few days at Tahiti, from where they took some women, hey retired to Pitcairn, which was uninhabited then. When Britain acquired control of he island in 1898, they transferred the descendants of the mutineers to Norfolk sland.

t. Helena. Area: 122 sq. km; Pop: 3200; Cap: amestown. St. Helena is in south Atlantic bout 1920 Km west of Africa. St. Helena ncludes Ascension Island about 1120 Km orthwest of St. Helena and Tristan du Cunha nd three other islands. St. Helena is famous n history as the island to which Napoleon vas exiled after his defeat at Waterloo in 815.

Turks and Caicos Islands. Area: 430 sq. km; Pop: 6228; Cap: Cockburn Town. The main islands of this group, in the Caribbean Sea, are Grand Turk and Salt Cay (Turks) and south and north Caicos (Caicos). In 1962, the islands were granted partial autonomy being administered by a Crown representative with the help of a local council and partly elected legislature. The population is mostly black. Salt, crayfish and sisal are the major exports.

3. Chile

Easter Island. Cap: Hangaroa; Area: 163 sq. km; Pop: 1000. Easter Island is a volcanic island in the south Pacific about 3760 Km west of Chile. Its archaeological remains show that it had a very ancient civilization. The main occupation today is cultivation.

Juan Fernandez. Area: 148 sq. km; Pop: 615. This group of islands is located about 640 Km west of the Chilean coast. It contains two major islands—Robinson Crusoe and Alexander Selkirk. Daniel Defoe is believed to have based his story of Robinson Crusoe on the four-year confinement of the Scottish sailor Alexander Selkirk on the Robinson Crusoe island. Lobster fishing is the main occupation of the islanders.

Chilean Antarctic Territory. Area: 1,249,993 sq. km; Pop: 200—This is the portion of the Palmer peninsula of the Antarctic that Chile has claimed for its own.

Diego Ramirez Islands. This is a group of uninhabited islands, lying some 100 Km southwest of Cape Horn.

Salay Gomez, San Ambrosio and San Felix Islands. These are three separate uninhabited islands in the Pacific, which are in the possession of Chile.

4. Denmark

Greenland: **Area:** 21,75,600 sq.km.; **Pop:** 59,862; **Cap:** Godthaab.

Greenland, the largest island in the world, lies to the north of North America. Around 84% of the surface is covered by an ice-cap with an average thickness of 500 feet. Most of the inhabitants are of mixed European and Eskimo origin. The main industry is fishing

In 1979, Denmark handed over local government to the Greenlanders. Greenlandic (Eskimo language) replaced Danish as the official language. Foreign relations are controlled by Denmark.

Faeroe Islands. Area: 1399 sq.km.; Pop: 41,929; Cap. Thorshavn. Faeroe islands lie in the Atlantic between Scotland's Shetland Islands and Iceland. The islands are 19 in number of which 17 are inhabited. The largest island is Stromo on which the capital Thorshavn stands. The main industry is fishing. The principal language is Faeroese. Home rule was granted in 1948. An elected Parliament controls the local administration. Two Faeroese delegates sit in the Danish Parliament.

5. Ecuador

Galapagos Islands. Area: 7842 km.; Pop: 3100; Cap: Baquerizo Moreno. Galapagos islands are a group of 60 volcanic islands, which lie in the Pacific, about 1040 Km. west of Ecuador. They have a unique assortment of fauna and were declared a National Park in 1936, so as to protect its wild life. The giant tortoise found on these islands is said to be the longest living animal in the world with a life span of 200 years.

6. France

French Guiana. Area: 91,000 sq.km.; Pop: 61744; Cap: Cayenne. French Guiana is on the northern coast of South America. Devil's Island in Guiana served as a penal colony for France, for nearly a hundred years from 1852. In 1946, Guiana was made an overseas department of France with representation in French Parliament.

French Polynesia. Area: 4000 sq.km.; Pop: 1,47,518; Cap: Papeete. The French Ploynesian islands numbering around 130 lie in the South Pacific. For administrative purpose, they are grouped together as follows. *1. Windward Islands.* (including Tahiti and Moorea) *2. Leeward Islands, 3. Tuamoto and Gambier Islands. 4. Austral Islands* and *5. Marquesas Islands.* The population is almost entirely Polynesian.

One of these islands-Muruora-about 1150 Km. southeast of Tahiti was used as a nuclear testing site by France in 1966 and 1968. and even as late as 1985.

Guadeloupe. Area: 1799 sq.km; Pop: 3,29,634; Cap: Basse-Terre. Guadeloupe proper comprises two islands–Basse–Terre and Grand Terre–separated by a narrow channel. They are in the Leeward Islands of Lesser Antilles. The islands of Marie Galante, Les Saintes, La Desirade and St. Barthelemy are part of Guadeloupe.

Martinique. Area: 1102 sq.km.; Pop: 3,24,832; Cap: Fort-de-France. Martinique is one of the Windward Islands of Lesser Antilles. The island is mainly known for its volcanic mountain. Mount Pelee, which erupted in 1902 in one of the most devastating earth-quakes known to history. Martinique is an overseas department of France.

Mayotte. Area: 373 sq.km; Pop: 48518; Cap: Dzaoudzi. Mayotte lies in the Mozambique channel between East Africa and Zanzibar. A part of the Comoro Islands, Mayotte chose to remain a French dependency while the rest of the Comoros became independent in 1975.

New Caledonia. Area: 19058; Pop: 1,47,536; Cap: Noumea. New Caledonia territory comprises several island groups in South Pacific, located about 1200 Km. east of Australia. Besides New Caledonia, there are the Loyalty Islands, about 125 Km. to the east (of New Caledonia), Chesterfield Islands, about 540 Km. to the northwest and the Isle of Pines, about 48 Km. to the south-east. New Caledo-

Micronesia: End Of Trusteeship

The UN Trusteeship Council in June last adopted a resolution on the future of the trust territory of the Pacific islands (Micronesia) by which the UN trusteeship agreement shall be terminated.

The resolution asked the United States to consult with the four parts of the territory on a date for their new status.

Micronesia is the last of the original 11 trust territories under the UN.

The resolution, co-sponsored by France and Britain, noted that the peoples of component parts– the Northern Marianas, the Marshall islands, the Federated States of Micronesia and Palau– had freely exercised their right to sef-determination in plebiscites observed by the Trusteeship Council. Three of them had chosen free association with the US while the fourth, the Northern Marianas, had opted for Commonwealth status.

nia has large reserves of nickel, iron, manganese and chrome. An overseas territory of France, it is administered by a governor, assisted by a popularly elected council.

Reunion. Area: 2510 sq.km; Pop: 5,09,855: Cap: St. Denis. Reunion is a volcanic island in the Indian Ocean and lies about 720 Km. east of Madagascar. The island was settled by France in 1605. About 25 per cent of the population are of French extraction. The island has a prosperous economy based on sugar cane. It was made an overseas department of France in 1946.

St. Pierre and Miquelon. Area: 42 sq.km.; Pop: 5840; Cap: St. Pierre. These islands lie in the Atlantic Ocean about 24 Km. southwest of Newfoundland. Most of the present population are descended from the early French and Basque settlers of the 17th century. Fishing is the main industry. The islands were made a department of France with local autonomy in 1975.

Southern and Antarctic Territory. Area: 7557 sq.km.; Pop: 183; Cap: Port aux Francais. This territory comprises two archipelagos in the south Indian Ocean–Kerguelen and Crozet, two islands Saint Paul and New Amsterdam and an area on the mainland of Antarctica. Research stations, hospitals and army bases are located on Kerguelen and New Amsterdam islands. The rest of the territory is uninhabited.

Wallis and Futuna. Area: 200 sq.km; Pop: 9400; Cap: Mata Utu. Wallis and Futuna are two small groups of islands in the Pacific and lie about 400 Km. west of Samoa. The population is largely Polynesian and the only occupations are connected with copra and fishing. Made an overseas territory of France in 1961, it is governed by an administrator assisted by a council made up of the chiefs of three main islands and three nominated members.

7. Netherlands

Netherlands Antilles. Area: 961 sq.km.; Pop: 2,63,504; Cap: Willemstad. Netherlands Antilles consists of two groups of islands in the Caribbean sea– Windward Islands and Leeward Islands. The Windward Islands comprise Curacao, Aruba and Bonaire, Leeward Islands include Saba, St. Eustatius and St. Maarten (part of St. Martin Island shared with Guadeloupe). The Windward Islands are volcanic and largely arid but Curacao and Aruba yield oil and have a prosperous economy based on petroleum and phosphate. Mining is another paying occupation. The Netherlands Antilles became a co-equal part of the Kingdom of Netherlands in 1954. The movement for independence is gaining ground in the islands.

8. New Zealand

Cook Islands. Area: 234 sq.km.; Pop: 18,127; Cap: Avarua. The Cook Islands are a group of small islands in South Pacific. Rarotonga is the largest island on which the capital Avarua stands. They became a British protectorate in 1888 and were annexed to New Zealand in 1901. Under a constitution adopted in 1965, the islands have full internal self-government in association with New Zealand.

Niue. Area: 259 sq.km.; Pop: 3556; Cap: Tutukla. Niue, geographically part of the Cook islands, has been separately administered since 1903. In 1974, Niue was granted self-government with a Prime Minister and a 14-member elected assembly.

Ross Dependency. Area: 4,14,398 sq.miles. This territory consists of part of the mainland of Antarctica and some islands. New Zealand claimed this territory in 1923. The region includes a whaling centre and a research station.

Tokelau. Area: 10 sq.km.; Pop: 1700; This territory comprises 3 atolls about 480 Km. north of Western Samoa. Once part of the Gilbert and Ellice islands, they were made New Zealand territory in 1925. The population is Polynesian. Copra is the major export.

9. Norway

Bovet Island. Uninhabited island in South Atlantic. Became a dependency of Norway in 1930.

Peter I Island. Uninhabited island in Antarctica. Became a dependency in 1933.

Queen Maud Land. An area in Antarctica claimed by Norway in 1939

10. Portugal

Azores Islands. Area: 2336 sq. km; Pop 250,892; Cap: Porta Delgade. The islands of Azores are in the Atlantic Ocean, about 1200

Madeira Wine

Madeira, famous for its special brand of wine, is a group of islands in the Atlantic, southwest of Azores. The famous Madeira wine was discovered by the sheerest accident. Some two centuries ago, a consignment of wine sent from Madeira to the West Indies was returned undelivered. When the returned bottles were opened, it was found the wine had acquired a unique flavour. The hot humid air of the tropics had played the trick. Thereafter, the wine was stored and allowed to mature under tropical conditions. And Madeira wine became famous the world over.

Km west of Europe. The Azores group includes 9 main islands and several smaller ones. The U.S. maintains an air base on Terceira island in the Azores. In 1976, internal self-government was granted to the Azores. But the Azoreans are clamouring for independence.

Macao (see *Independent Nations)*

Madeira Islands. Area: 795 sq. km; Pop: 267,491; Cap: Funchal. Madeira lies in the Atlantic Ocean 960 Km south west of Portugal. The islands comprise two principal islands—Madeira and Portosanto—and several smaller islands, which are uninhabited. In 1976 Portugal granted Madeira full internal autonomy (see Box)

11. Spain

Balearic Islands. These islands are in the Mediterranean off the south coast of Spain. Majorca, Minorca, Ibiza and Formentera are the largest islands. The islands had a very ancient civilization dating from the Phoenicians. Spain granted limited autonomy to these islands in 1978.

Canary Islands. Area: 7273 sq. km; Pop: 1,256,650; Cap: Las Palmas and Santa Cruz. The Canary Islands lie in the Atlantic off the north west coast of Morocco. Of the 13 islands comprising the group, the largest are Grand Canary, Tenerife and Fuerte Ventura. In 1927 the islands were divided into two provinces—one with its capital at Las Palmas on Grand Canary and the other with its capital at Santa Cruz on Tenerife.

The islands are volcanic and mountainous, the highest peak Pico de Teide in Tenerife rising above the snow level to 12,198 feet.

12. United States

Guam. Area: 500 sq. km; Pop: 70,000; Cap Agana. An island in the Indian Ocean administered by U.S. as an 'unincorporated' territory.

Midway Islands. Area: 5 sq. km; Pop: 2356. A group of islands in north Pacific Ocean, an incorporated territory of U.S.

Marshall Caroline and Marina Islands. Area 1500 sq. km; Pop: 126,440; Cap: Saipan. U.S Trust Territory in the Pacific under a High Commissioner.

Wake Island. Area: 6 sq. km; Pop: 1763. U.S unincorporated territory in the Pacific.

LANGUAGES

No one has yet taken a satisfactory count of the world's languages. There are many estimates. They vary by thousands. The main cause of confusion is how to distinguish a language from a dialect.

Linguists have not agreed as to what distinguishes a language from a dialect. In view of this, differing estimates are quite possible—and admissible. We have here adopted the estimate of some French and American linguists who have listed a total of 2796 languages.

Of the 2796 languages mentioned, over 1200 are spoken by American-Indian tribes, most of which do not number more than a thousand people. African-Negro group speak some 700 different languages whil the natives of Australia, New Guinea and other Pacific islands account for as many a 500 languages of their own. Add to this a estimated 200 minor languages of Asia o unknown origin and we find that the tota number of the world's major language (spoken by a million or more people) hardl exceeds 160; in other words, the overwhelm g majority of the world's languages, say 85 er cent, are spoken by numerically small roups, while some 15 per cent represent ajor languages.

anguage Families: The world's nguages considered as families fall into 10 road groups. 1. Indo-European, 2. Semito-amitic, 3. Sino-Tibetan, 4. Dravidian, 5. ral-Altaic, 6. Malayo-Polynesian, 7. African-egro, 8. American-Indian, 9. Caucasian, 10. liscellaneous.

1. Indo-European Family†. The Indo-Euroean languages may be subdivided into four ajor divisions. (a) *Germanic* includes Enlish, German, Dutch, Swedish, Danish, lorwegian, and Icelandic. (b) *Romance* inludes French, Spanish, Portuguese, Italian nd Romanian. (c) *Balto-Slavic* includes Rusian, Polish, Ukrainian, Czech, Slovak, Serbo-roatian and Bulgarian. (d) *Indo-Iranian* roup may be conveniently divided into *ranian* and *Indic* or Indo-Aryan branches. *anskrit* or the Indic branch is the original ndo-Iranian language that was brought into ndia by the Aryan immigrants. It is the arliest of the Indo-European languages to ppear in recorded form.

2. Semito-Hamitic Family comprises Araic, Hebrew, Libyan, Berber, Galla, Amharic thiopia) and Somali languages.

3. Sino-Tibetan Family is dominated by hinese, which with its many dialects comands 700 million speakers out of a total of bout 760 million for the whole family. Tibean, Burmese, Thai, Japanese and Korean nguages form the rest of the family.

4. Dravidian Family includes the major nguages of South India, Tamil, Telugu, annada and Malayalam.

5. Ural-Altaic Family includes Finnish, lungarian, Turkish, Mongol and Manchu.

6. Malayo-Polynesian Family comprises laori (native to New Zealand), Malagasy Madagascar), Malay and Indonesian.

7. African-Negro group covers the major frican languages, Sudanese, Guinean, Ban, Hausa (Nigeria), Swahili and others.

8. American-Indian Family comprises any languages of the Red Indian tribes and ncludes the languages of the Eskimos and leuts.

9. Caucasian Family consists of a number of small languages like Georgian and Circuosian.

10. Miscellaneous. Among the lesser families, the *Austric family* apparently commanded a wide circulation in very ancient times. It is at present represented by tribal tongues like the *Munda* group in India. The aboriginal languages of Australia, Tasmania and New Guinea apparently belong to this group.

Basque, which is spoken on both sides of the Pyrenees in Europe, appears to be a remnant of a language family called Mediterranean, which has long since disappeared. The present speakers of Basque number nearly a million.

Basque is a very difficult language. The story goes that the devil tried to learn Basque, so as to tempt and ruin the Basques but gave up the attempt in despair. Basque has no affinity to any European language but bears close resemblance to many American-Indian tongues. Some linguists believe that Basque was the language of the lost continent, Atlantis.

The *Ainu,* the language of the white-skinned people of Hokkondo, the northernmost of Japanese islands, the *Hyperborean* tongues of Siberia and Kamchatka and many other minor groups too numerous to mention make up the rest of the world's languages.

Modern Languages: Of the great modern languages, 13 are spoken by 50 million or more people. They are Chinese, English, Hindustani*, Russian, Spanish, German, Japanese, Arabic, Bengali*, Portuguese, Malay (Indonesian), French and Italian. Approximate estimates of speakers of different languages made by various authorities differ greatly, sometimes by millions. This is so because the speakers of different languages are spread over the whole globe and no statistics beyond so-called guestimates are available about them.

Chinese, the first language in point of speakers is mainly confined to China and Manchuria. *Japanese* is first and foremost the native tongue of the people in Japanese islands, but enjoys some currency in Korea and the nearby area of Asiatic mainland. *Malay* is spoken in Indonesia and Malaysia and is understood as far as the Philippines

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The term Indo-Hittite is now preferred to Indo-European. This will include Anatolian language and Indo-European proper.

* Sea-India.

Major Languages

Language	No. of speakers (in million)	Principal Areas
Chinese‡	700	China
English	300	UK, USA, Canada, Ireland, Australia, New Zealand
Russian	200	USSR
Spanish	165	Spain, Latin America
Hindi	153	North India
Japanese	100	Japan
German	100	Germany, Austria Switzerland
Bengali	95	India, Bangladesh
Portuguese	90	Portugal, Brazil
Arabic	90	Middle East North Africa
French	75	France, Beigium Canada, Switzerland
Italian	55	Italy
Indonesian	50	Indonesia
Javanese	45	Java (Indonesia)
Telugu	44	Andhra Pradesh (India)
Tamil	42	Tamil Nadu (India) Sri Lanka
Marathi	41	Maharashtra (India)
Urdu	40	India, Pakistan
Panjabi	40	India, Pakistan
Korean	40	Korea (North & South)
Ukrainian	37	Ukraine (USSR)
Vietnamese	35	Vietnam
Polish	32	Poland
Turkish	30	Turkey
Gujarati	25	Gujarat (India)
Thai	25	Thailand
Malayalam	22	Kerala (India)
Kannada	21	Karnataka (India)
Farsi (Persian)	20	Iran
Burmese	20	Burma
Oriya	19	Orissa (India)
Romanian	18	Romania
Serbo-Croatian	15	Yugoslavia
Hausa	15	Nigeria, Niger
Pushto	14	Afganistan Pakistan
Bhojpuri	14	Eastern India
Sudanese	13	Sudan
Hungarian	12	Hungary
Dutch	12	The Netherlands
Swahili	12	East Africa
Visayan	12	Philippines
Nepali	10	Nepal
Greek	10	Greece
Czech	9	Czechoslovakia
Assamese	8	Assam (India)
Swedish	8	Sweden
Bulgarian	8	Bulgaria
Belorussian	8	Belorussia (USSR)
Sinhalese	8	Sri Lanka
Amharic	8	Ethiopia
Yoruba	8	Nigeria
Madurese	8	Madura (Indonesia)
Ibo	8	Nigeria
Azerbaijani	7	Azerbaijan (USSR)
Sindhi	7	Pakistan, India
Catalan	6	Spain
Chattisgarhi	6	Madhyapradesh (India)
Magadhi	6	Bihar do
Maithili	6	" do
Angika	6	" do
Fulani	6	West Africa
Malagasy	6	Madagascar
Uzbek	6	Uzbekistan (USSR)
Malaya	6	Malaysia, Singapore
Chuang	6	China
Tagalog	6	Philippines
Quechua	6	Peru, Bolivia
Danish	5	Denmark
Flemish	5	Belgium
Provencal	5	France
Tartar	5	Tartar (USSR)
Kurdish	5	Turkey, Iraq, Iran USSR
Khmer	5	Kampuchea
Ruanda	5	Randa, Congo
Galla	5	Ethiopia
Norwegian	4	Norway
Marwari	4	Rajastan (India)
Finnish	4	Finland
Yiddish	4	USA, Israel
Slovak	4	Czechoslovakia
Armenian	4	Armenia (USSR)
Kazakh	4	Kazakhistan (USSR)
Tibetan	4	Tibet
Uighur	4	Sinkiang (China) USSR
Twi	4	Ghana
Malinke	4	West Africa
Sotho	4	Lesotho (Africa)
Zulu	4	South Africa
Xhosa	4	do
Lithuanian	3	Lithuania (USSR)
Georgian	3	Georgia (USSR)
Hebrew	3	Israe
Santali	3	Eastern India

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‡ Including (Mandarin-560, Cantonese 45, Wu-40, Min 35, Hokka-20)

Yi (Lolo)	3	China
Minangkabau	3	Sumatra (Indonesia)
locano	3	Luzon (Philippines)
Somali	3	Somalia
Mossi	3	Bourkina Fasao
Albanian	2.5	Albania
Mongolian	2.5	Mongolia (China)
Miao	2.5	China
Buginese	2.5	Celebes (Indonesia)
Kashmiri	2.5	Kashmir (India)
Rajasthani	2	Rajasthan (India)
Moldavian	2	Moldavia (USSR)
Lao	2	Laos
Achinese	2	Sumatra (Indonesia)
Balinese	2	Bali (Indonesia)
Bikol	2	Luzon (Philippines)
Ganda	2	Uganda
Nyanja	2	Malawi, Zambia
Mbunda	2	Angola
Makua	2	Mozambique
Afrikaans	2	South Africa
Mayan	2	Mexico, Guatemala
Guarani	2	Paraguay
Latvian	1.5	Latvia (USSR)
Slovenian	1.5	Yugoslovia
Mordvin	1.5	Mordavia (USSR)
Chuvash	1.5	Chuvash (USSR)
Tadzhik	1.5	Tadzhikistan (USSR)
Gondi	1.5	East India
Shan	1.5	Burma
Karen	1.5	Burma
Batak	1.5	Sumatra (Indonesia)
Sidamo	1.5	Ethiopia
Kikuyu	1.5	Kenya
Kongo	1.5	Congo
Luba	1.5	Congo
Bemba	1.5	Zambia
Bhili	1	Gujarat (India)
Welsh	1	Wales
Breton	1	Brittany (France)
Macedonian	1	Macedonia (Yugoslavia)
Estonian	1	Estonia (USSR)
Bashkir	1	Bashkir (USSR)
Turkmen	1	Turkmen (USSR)
Kirgiz	1	Kirgiz (USSR)
Baluchi	1	Pakistan, Iran
Dayak	1	Borneo (Indonesia)
Tulu	1	Karnataka (India)
Wolof	1	Senegal
Mende	1	Sierra Leone
Ewe	1	Ghana, Togo
Fon	1	Dahomey
Kanuri	1	West Africa
Fang	1	Gabon, Cameroon
Drinka	1	Sudan
Lingala	1	Congo
Mangbetu	1	Congo
Rundi	1	Burundi, Congo
Kamba	1	Kenya
Luo	1	Kenya
Sukuma	1	Tanzania
Tigrinya	1	Ethiopia
Shona	1	Zimbabwe
Tswana	1	Botswana South Africa

Arabic covers incredibly huge area from Africa right across Asia and is learned wherever Islam predominates, though it is almost everywhere mingled with other languages of non-Arabic stock like Berber, Cushite and Hebrew.

English covers nearly one-fifth of the Earth's surface. It is spoken by 200 million people in the western hemisphere and includes over 60 million in Europe, some 25 million in Asia, about 5 million in Africa and more than 13 million in Oceania, comprising Australia and New Zealand.

Russian dominates one-sixth of the total area of the Earth, being the national language throughout the Soviet Union. But Russian is used as a native tongue only by half the population of Soviet Russia. The rest speak some 145 different languages

Spanish appears in its homeland Spain and the ex-Spanish colonies. But these account for only a quarter of the Spanish-speaking population. The rest (three-fourths) are in the western hemisphere, covering Mexico, Central America, Cuba, Puerto Rico, the Dominican Republic and all South American countries barring Brazil and the Guineas.

Portuguese is spoken in Portugal and the ex-Portuguese colonies. But the greatest number of Portuguese speakers is concentrated in Brazil.

German is practically confined to Europe where it is spoken in Germany, Austria and most of Switzerland. But it enjoys wide currency as a scholastic language all over Europe, especially in Czechoslovakia, Poland, the Netherlands, Hungary, Yugoslavia, Sweden and Norway, where it is spoken by an estimated 20 million people.

French 'is the language of France, part of Switzerland, Belgium, ex-French possessions or Departments overseas and Canada (especially the province of Quebec). It is reputed as a language of culture in Europe, and is spoken by some 5 million non-French men, in addition to their mother tongues.

Italian, the language of Italy, is current in the former Italian colonies, Eritrea, Somaliland, Libya and Cyrenica and is used by Italian emigrant groups numbering some 10 million, living in various Mediterranean countries, and USA, Argentina, Brazil, Uruguay and Chile.

RELIGIONS

Religions have played a very great part in the evolution of human civilization and culture. They evolved as a set of beliefs concerning the cause, nature and purpose of the universe and grew as an organised system of beliefs that bound people to become a close-knit society. Very often the religions spread out from the lands of their origin.

Hinduism, has left its permanent impact on Indian life and culture. Buddhism wrought revolutionary transformation in the life and culture of the peoples of South-East Asia and China. Christianity and Islam spread among the peoples of Asia and Europe kindling latent fires and opening fresh chapters in the history of the world.

The religions of the world may be grouped into three broad classes. 1. Leading religions, 2. Lesser religions and 3. Primitive religions. The leading religions are Buddhism, Christianity, Confucianism, Hinduism and Islam. The lesser religions include Jainism and Sikhism of India, Judaism of Palestine, Shintoism of Japan, Taoism of China and Zoroastrianism originally of Persia. The primitive religions count by the thousand. They are all very small communities, with a handful of votaries each. They are principally found among the aboriginal tribes of Australia, the Americas, India, Burma, South East Asia, Indonesia and Africa.

Buddhism. Buddhism was founded by Gautama Buddha who lived in the 6th century B.C.† Gautama, otherwise known as Siddhartha, was the son of an Indian prince, Suddhodana, chief of the Sakyas. Even as a child he was given to contemplation. The sorrows and sufferings of the world tormented his loving heart and he abandoned his princely home, his wife and child and started in pursuit of enlightenment at the age of 29. After years of wandering and contemplation Gautama at last found enlightenment while meditating under a great peepul tree. From that day, he came to be known as the *Buddha* or the Enlightened One.

The Buddha preached that emancipation from the cycle of rebirths, i.e., *Nirvana,* can be attained by a path of self-purification. He attached little importance to rituals and ceremonies in which the Brahmin priests indulged. He does not appear to have even envisaged the existence of a Supreme God. He preached in the vernacular of the people, a simple doctrine of love and mercy which appealed to all.

Buddhism is essentially a religion of kindness, humanity and equality. It denounces all claims to superiority on grounds of birth or caste. The eminence or lowness of men is determined by their own conduct and actions.

Two or three centuries after the death of the Buddha, we find the Buddhist religion divided into two broad schools, the *Hinayana* and the *Mahayana*. The Hinayana school prided itself on maintaining the teachings of the Buddha in their original form. The Mahayana school converted the human Buddha—*Sakya muni*—into an eternal and supreme deity, presiding over the world and succouring his devotees.

Mahayana Buddhism is prevalent in China, Tibet, Korea and Mongolia. Hinayana Buddhism is prevalent in Burma, Sri Lanka Kampuchea and Vietnam.

The most sacred places of Buddhism are Lumbini in Nepal, where the Buddha was born, the Bodh Gaya (Bihar), where he received enlightenment and Kusinagara (UP), where he attained ***nirvana***.

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† The actual dates of Buddha's birth and death are disputed.

Christianity founded by Jesus Christ now commands the largest following in the world. Christ was born in B.C. 4 in Judea.* He started preaching about the Kingdom of God when he was thirty. His activities roused the opposition of the Jewish highpriests who accused him of blasphemy.

He was crucified under the orders of Pontius Pilate, the Roman Governor. After three days, Christ was resurrected from the dead. With the Resurrection of Christ, his disciples took heart and went about preaching the kingdom of God to all the peoples of the world.

Christianity spread throughout the Roman Empire where it was made the state religion in the 4th century A.D. Later, the Church split into two broad groups—the Western Church under the Pope in Rome, and the Eastern Churches under the Patriarchates of Antioch, Alexandria and Constantinople. Still later, further disruptions took place. The Roman Church was broken up by Protestantism, while in the Eastern Churches, many communities like the Armenians, Ethiopians, Russians and Indians set up their own Patriarchates.

Jerusalem, where Christ lived and preached, is the most sacred place of Christians all over the world.

Confucianism. Kung Fu Tsu, better known as Confucius, was born in 551 B.C. in China. Even as a young man, he had an ardent thirst for knowledge. When still in his youth, he met and talked with Lao-tse who was then a famous figure. Struggling through poverty, Confucius first became a minor civil servant and later rose to be the magistrate of a state. His brilliant administration evoked the jealousy of others, who conspired to bring about his dismissal in 496 B.C. Thereafter he wandered about penniless and homeles, until in 478 B.C. he died, aged seventythree.

After his death, his sayings were collected in the ***Analects*** and he was honoured throughout China, as a deity ranking with the deities of Heaven and Earth. Confucius was a moralist rather than the founder of a religion. He conserved, systematised and taught the age-old teachings in China. He advocated regularity in life, temperance in food and drink and emphasised the importance of learning, loyalty and truthfulness. He formulated a golden rule of reciprocity, "what you do not want done to yourself, do not to others"—just a step short of the Laotsean and Christian doctrine of returning good for evil.

Peking is the city sacred to the adherents of both Taoism and Confucianism.

Hinduism. The word ***Hindu*** originally was the Persian rendering of the Indian word ***Sindhu***—the Sanskrit name of the river Indus. The Persian name ***Hindu*** must have come into being in the 6th century B.C. when the territory round Indus formed part of the Persian Empire. But the name disappeared from India, with the exit of the Persians. It came back to India, centuries later, with the Muslim invasions from the north-west.

At that time, however, the word ***Hindu*** simply meant ***Indian*** and had no religious connotation. Subsequently, under the Mughal emperors, the word assumed a religious tint and under the British it came to be applied exclusively to the people, who followed the age-old religion of India.

The basis of Hinduism lies in the four ***Vedas*** of the Aryans. The word ***veda*** is derived from ***vid***, to know. The vedas are known as ***sruti***, or that which is heard or revealed. The orthodox Hindus think that the vedas are ***anadi***, without a beginning. Others believe that the vedas were revealed to ancient ***rishis*** (sages).

The ***Rigveda*** is the earliest and the most important of the four vedas. It is the oldest scripture in the world having been composed in the third millennium B.C. It consists of over 1000 hymns, a heterogeneous collection of prayers to gods like ***Agni, Vayu, Varuna, Indra, Mitra, Soma, Ushas*** and others, instructions on rituals, incantations, songs, and verses on nature. The other three vedas are more specialised. The ***Yajur Veda*** deals mainly with sacrificial invocations, the ***Sama Veda*** contains melodic invocations and the ***Atharva Veda*** deals with medicines and magical incantations.

Each Veda is divided into ***mantras*** (hymns), ***Brahmanas*** which explain the mantras and rituals, *Aranyakas*, mystic teachings meant for meditation in forests and *Upanishads*, speculations on Being and Reality.

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* The date is disputed. See Chapter 'Outline of History in part one

Early Aryans. The early Aryan gods were deifications of natural forces, Agni, Varuna, Soma, Surya etc. They were worshipped with sacrifice. There were no temples or images. The sacrifices were performed on open altars, where a wood fire was lighted, and offerings of food and drink, in the shape of meat, fat, butter, milk, cakes of barley and the spirituous drink *soma*, were offered to the gods, who were supposed to dwell in the sky. This was the vedic rite of *homa*, the quintessence of vedic religion.

When the Aryans came to India, they encountered a highly civilised people—the Dravidians—the builders of the City Civilization of the Indus Valley. They defeated the Dravidians and probably enslaved them. But though superior in war, the Aryans were far behind the Dravidians in culture. Before long they succumbed to the superior culture the pre-Aryans and adopted it for their own. *Graecia capta ferum victorem cepit** (Enslaved Greece made a slave of her rough conqueror).

The mainstay of popular Hinduism is the later vedic literature which consists of the *puranas* (old stories) and *itihasas* (epics). There are 18 puranas: *Matsya, Markandeya, Bhagavata, Bhavishya, Brahma, Brahmanda, Brahmavaivarta, Vayu, Vishnu, Varaha, Vamana, Agni, Naradiya, Padma, Linga, Garuda, Kurma*, and *Skanda*. There are also a number of *upa puranas* or minor puranas. Some puranas are believed to date back to the pre-Christian era. But many are believed to have been written between the third and the seventh centuries A.D.

The Epics. The *Itihasas* or epics are two—the *Ramayana* by Valmiki and the *Mahabharata* by Vyasa. Both these great works drew their inspiration from pre-Aryan folk-lore. The story of Rama or *Ramayana* looks like a blend of three distinct stories of pre-Aryan origin, put together at different times and finally embellished as a national poem of epic dimensions. The *Mahabharata*, on the other hand, embodies the legends of the Aryans and the non-Aryans and wa created consciously as the national poem of a new Hindu nation of mixed origin welde into one people under Brahmana guidance.

The popular gods of the early Aryans Indra, Varuna, Agni, Soma, Surya and others yielded place in course of time to a group o more powerful and more personal gods more profound and cosmic and more philosophical in conception—namely the puranic gods of Hinduism headed by *Siva-Uma* and *Sri-Vishnu*. *Siva* and *Uma* are clearly pre-Aryan gods. *Vishnu* was partly Aryan—a form of Sun god and partly Dravidian—the blue sky-god. *Sri* was ar Aryan goddess to start with, the Indiar counterpart of the European *Ceres*, but in her association with Vishnu as *Gajalakshmi*, she is indigenous and pre-Aryan.

The outstanding instance of the Dravidisation of the Aryan religion is found in the preponderant place given to the *puja* form o worship compared to Aryan *homa*. Puja rite which involves the offering of flowers, fruits leaves, water etc. to an image or symbol o divinity, is characteristically Dravidian. This is now the everyday form of worship for al Hindus—the homa being kept up artificially among limited groups of Brahmins or Kshatriyas.

Bhagavad Gita. The imprimatur o theological sanction for puja is found in the Bhagavad Gita** which is the bedrock o modern Hinduism.

"If any offers me with devotion, a leaf, flower, a fruit or water, I receive that offere in devotion by the person whose soul i disciplined". Gita IX, 26.

Hinduism emerged as the national religio by a brilliant synthesis of Aryan and non Aryan ideas. This ability to adopt or adjus alien ideas has made Hinduism a highl receptive and tolerant religion. It is thi receptivity that has helped it to survive the onslaughts of other religions and influence through centuries.

When Buddhism rose as a challenge t orthodox Hinduism, Hinduism reacted b sanctifying the Buddha as an *avatar* of Vishnu. Similarly, the Jain idea of non-violence o non-injury to living things appealed to man people as a gospel of mercy, good will and fellowship with all living creatures. Hinduism took over the idea and worked it out as the doctrine of ***Ahimsa***, which was elevated as the highest of all ***dharmas***.

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* Horace

- S.K. Chatterjee—*Vedic Age, Bharat Vidya Bhavan.*

** Bhagavad Gita occurs in the Mahabharata.

In spite of its great adaptability and accommodation, Hinduism has been rocked by dissensions and disputations. The bitter struggle between ***Vaishnavites*** and ***Saivaites***, between supporters of the God Siva, lasted for a long time. But this was rather a struggle for supremacy in the Hindu fold—never a segregation from it.

Like all old religions, the appeal of Hinduism has flagged and waned from time to time. And from time to time, reformers have sprung up, brilliant intellects and devout ascetics like Sankaracharya (8th century A.D.), Ramanuja (12th century) and Madhwa (13th century)—who have not merely restored popular faith but also countered heretical or fissiparous tendencies, by a re-interpretation of Hindu philosophy and reformation of Hindu practices, to meet the demands of the times.

Sankaracharya. Modern Hinduism may be dated from the days of ***Sri Sankaracharya***, more than 1000 years ago. Sankara lived in the 8th century A.D. He was born at Kaladi in Kerala of a Namboodiri Brahmin family. He is by far the greatest of Hindu reformers. Before he died at the early age of 32, he travelled through India thrice, debating with scholars and expounding his theory of ***Advaita*** or monism. He was not only a great thinker but also a great organiser.

Among the most durable monuments to his organising zeal are the famous monasteries of Sringeri in Karnataka, Dwaraka in Gujarat, Puri in Orissa and Badrinath on the snowy heights of the Himalayas. He purged Hinduism of many evil cults and practices. Thus, the worship of the Mother Goddess, who was called by many names—***Devi, Durga, Kali, Lakshmi, Parvati, Amba, Amman***, etc—had degenerated into licentiousness.

Devi worship, in the past was part of the *Sakta* cult with its five Makaras, ***matsya*** (fish), ***mamsa*** (meat), ***madya*** (liquor), ***mudra*** (dance), and ***maithuna*** (copulation). Sankara reformed this cult and restored it to its original purity. Similarly he is said to have put down the ***Kapalikas***, who indulged in human sacrifices to appease God Bhairava. Sankara thus rejuvenated Hinduism and gave it a new philosophy and a new look.

Ramanuja, the next great reformer lived in the 12th century A.D. He was born in Sriperumbadur in Tamil Nadu. He modified Sankara's philosophy of ***Advaita*** and preached a new philosophy ***Visishtadvaita*** or qualified monism. Ramanuja laid great emphasis on ***bhaktimarga*** or deliverance by way of devotion to a compassionate god, in contrast to ***Karmamarga*** or the way of deliverance by the performance of vedic rites.

Madhwa, born in 1238, near Udipi in Karnataka is the third of the great reformers. He is the supreme exponent of ***dvaita*** or dualism. All these great reformers stressed the importance of ***bhakti*** or devotion to a personal god.

The renovation of Hinduism started by this great trio of the south, was continued by a number of saints and sages in the rest of India, Ramananda of Allahabad. Vallabhacharya of Benares, Namadeva of Maharashtra. (who unlike others came from a low caste), Mirabai of Rajasthan (a princess turned ***sanyasin)***, Ekanath, Tukaram and Ramdas, all from Maharashtra, Surdas, the blind poet of Agra, Lalla of Kashmir, Sant Kabir of Punjab and others.

The greatest of the ***bhakti*** leaders and one of the greatest reformers of Hindu religion is Chaitanya (1485-1533), who hailed from a Brahmin family in Bengal. At the age of 24 he became a sanyasin and spent the rest of his life, preaching the bhakti movement all over North India.

Revitalisation. Organised work for the re-vitalisation of Hinduism started with Swami Dayananda Saraswati (1824-1883). He founded the ***Arya Samaj*** and started the ***Sudhi*** (purification) movement, for the conversion of non-Hindus to Hinduism. He was a great Sanskrit scholar and admonished his followers to go back to the Vedas.

The next great reformer, in point of time, was *Ramakrishna Paramahamsa* (1836-1886). He was a poor priest in a temple of Calcutta, without any formal education, eastern or western. But he was a deeply religious man, who believed in the inherent truth of all religions. His catholicity, mysticism and spiritual fervour attracted a small band of devoted disciples. They formed a Mission, named after him, the Ramakrishna Mission.

The most famous leader of the Mission was Narendranath Datta, an English educated disciple of Paramahamsa. In later years, he became famous as ***Swami Vivekananda*** and, carried the message of Hinduism to far off countries like USA. The Ramakrishna Mission stands for social and religious reform, based on the ancient culture of India.

ISLAM. In Arabic, Islam means submission, obedience or peace. It is meant as the obedience and submission to God to attain peace in the world. The believers of this universal religion are called Muslims. They believe in one and only God, His Angels, His Books as completed by the Quran, as the word of God revealed to Prophet Muhammad through Angel Garbiel, His Messengers, with Muhammad being the last of them all.

Some call Islam ***Mohammedanism*** and address believers as ***Mohammedans***. Muslims reject this as the misnomer will imply that the religion was founded by Muhammad, a mortal being. They believe that Muhammad was commissioned as prophet by God to teach the word of God.

The Muslims have to bear witness to the one-ness of God and the messengership of Muhammad; have to observe prayers five times daily with a weekly Juma prayer on Friday noons; have to pay a religious tax of 'Zakath' to the rightful beneficiaries, the minimum of which is two and a half per cent of the annual net income or of the total value of stock in business after discounting expenses and credits; have to keep the dawn-to-dusk fast, without food, drinks and smoking, in the ninth month of Ramzan of the Islamic Year. They have to make a pilgrimage to the annual congregation called ***Haj*** to Makkah (Mecca) in Saudi Arabia in the second week of the 12th month of Dul Haj. This pilgrimage once in a lifetime, to Kabah in Makkah is obligatory to the Muslims, male or female, who are financially, physically and mentally fit.

Every Muslim turns his face five times daily towards Kabah, the small cubical mosque in Makkah. They believe that it was the first mosque to be dedicated to the pure worship of the one and only God.

The Muslim Era began with the emigration of Muhammad from Makkah to Madina in 622 A.D. The Islamic Calendar is lunar, determined by the sight of the Moon. It is of 12 months, and each month is either thirty or twenty-nine days, depending upon the position of the Moon.

The two main festivals of the Muslims are ***Idul Fiter*** and ***Idul Azha*** publicised as 'Ramazan'. Idul Fiter is the feast of breaking the fast of Ramazan on the first day of the tenth month of Shavval. Idul Azha is the festival of sacrifice, mentioned otherwise as ***'Bakrid'*** in Calendars. This falls after two months of Ramazan, on the tenth day of the last month of Dul Haj, a day after the holy congregation of Haj at Makkah. Prophet's day or Miladunnabi (the birthday of Prophet Muhammad) and Muharram (the day of sacrifice of Imam Husain, grandson of Muhammad) are also celebrated by Muslims.

Islam had its influence in the three continents of Asia, Africa and Europe. It gave right of property to women 12 centuries before England had adopted it in theory.

As per 1981 statistics, there are fifty-seven crore (570 million) Muslims in the world. Indonesia with 14 crore (140 million) tops the list. India has nine crore of Muslims with Bangladesh 7.6, Pakistan 7.5, Nigeria 6.2, Russia 6, and China 5 crore.

Jainism derives its name from Jaina (the conqueror), the second name of Vardhamana Mahavira. Mahavira, like Buddha belonged to a princely family in Vaisali. At the age of 30, Mahavira renounced the world and spent 12 years in austerity and meditation in search of truth. At last, at the age of 42, while meditating under an Asoka tree, he received enlightenment. He was thereafter known as Jaina, the Conqueror.

According to Jain legends, Mahavira was born in the beginning of the sixth century B.C.* The actual dates of his birth and death are hotly disputed.

Jainism preaches that by following the threefold path, all souls will be released from the cycle of births and deaths and will reach the pure and blissful abode above (Sidha ila). The threefold path consists of three ewels (triratna), right belief, right cognition nd right conduct.

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* "The 2500th Nirvana Anniversary of Mahavira was celebrated as a national festival for one year commencing on 13th November, 1974"

After A.D. 82 Janinism split into two groups, he Digambaras and the Svetambaras. The Digambaras wore no clothes, while he Svetambaras wore white clothes. Both roups believed in overcoming the senses y meditation and penance.

The Jains have many places of pilgrimage n India. The most important of them are the nountain of Samata, near Parsanath in Bihar, vhere Parsua is said to have attained nirva- ia; Papapuri or Pavapuri where Mahavira lied; Mount Abu in Rajasthan and Shravenbelgol in Karnataka, where the tem- oles of Tirthankara, Adinath and Bahubali are ituated, and the high monolithic statue of Gomateshwar, son of Rishabha, stands.

udaism. Judaism, the religion of the Hebrews was in existence long before its irst prophet and lawgiver Moses came on he scene. The first historical figure among he Hebrews is Abraham, who left Ur in Chaldaea with the Hebrew tribe, about 2000 3.C. After a long period of wandering in the rabian desert, the Hebrews at last settled in Egypt. However, they were enslaved by the nighty Pharaohs.

It was left to Moses to liberate the Heb- ews from Egyptian bondage and to lead hem to a land of milk and honey promised hem by God. On the way, at Mount Sinai, Aoses recevied the 'Ten Commandments' rom 'Yahweh' or Jehovah, the Supreme God. By the time the Hebrews had settled in the Promised Land, the first five books of Moses ad been written.

The Hebrews organised themselves into he Kingdom of Israel round about 1000 B.C. n 586 B.C. Nebuchadnessar conquered srael and carried off the Hebrews into the Babylonian Captivity. With the conquest of Palestine by Cyrus, the Hebrews were reset- led in Israel. It was during this period that he writings of the Prophets and the Psalms vere codified.

The Law, the Prophets and the Psalms emained as separate holy books until the me of Christ, when they were put together s the Hebrew Bible or the Old Testament. The Talmud, which is a collection of detailed aws for the guidance of civil, domestic and social life, was completed during the 4th and 5th centuries A.D.

Religious Membership

Total Christian	:	1,056,692,845
Roman Catholic	:	621,639,320
Eastern Orthodox	:	65,645,210
Protestant	:	369,408,315
Jewish	:	17,320,140
Muslim	:	555,277,180
Zoroastrian	:	245,620
Shinto	:	33,050,000
Taoist	:	20,563,475
Confucian	:	163,130,115
Buddhist	:	250,951,580
Hindu	:	462,589,910
Total Membership	:	2,559,820,000
Total population	:	4,721,886,000

Source: Britannica Book of the Year

Judaism is a simple religion which aims at a moral life. To the Jews, right conduct is more important than right belief. According to the Talmud every good man is assured of heaven, the gentile who observes the moral law being the equal of the High Priest. Judaism is free from sentimentalism and is averse to self-imposed suffering, idleness and asceticism. Jerusalem is the Holy City of the Jews.

Shintoism. Shinto is a Japanese ethnic religion. The word "Shinto" means "the way of the spirits", the underlying principle being ancestor worship. It must have evolved gradually, accumulating fresh material as ages passed without any religious reformer directing it or altering it. It has no sacred books or moral code.

Shint is the religion of the followers of Mikado, the Japanese Emperor.

The Mikado is, in fact, the focal point of the religion, the only God that it knows. There are, however, innumerable deities. Except for certain rituals developed through the ages, Shinto has no religious content or appeal.

Shinto declined rapidly after the Japanese emperor surrendered his claim to divinity in 1947.

The central shrine of Shintoism is at Ise, in Central Japan, to which all devout Japanese make pilgrimages. Shintos are found almost exclusively in Japan.

Sikhism. The Sikh religion was founded by Guru Nanak who lived in the Punjab between A.D. 1469 and 1538. He was very much troubled at the frequent quarrels between Hindus and Muslims. He preached that there was only one God for Hindus and Muslims; and tried to work out a synthesis of the two religions. His mission became popular and he very soon had a large following. He travelled extensively, going as far as Makkah and was in frequent contact with the leading sages of Hindu and Muslim religions. On his death, he was succeeded by his disciples who became Gurus in their turn.

The Gurus have built up the modern Sikh community. The fifth guru, Guru Arjan Mahal (1581-1606) compiled the *Adi Granth*, the first sacred book of the Sikhs. The most famous Guru is Guru Govind Singh (d.1708). He organised the Sikhs into a militant community. He instituted *Pahul* or baptism in water stirred by a dagger.

Those who were baptised were known as the *Khalsa* (pure) with the designation *Singh* (lion). All members of the Khalsa had to wear the 5 k's—*Kes* (long hair), *Kangha* (comb), *Kripan* (sword), *Kachcha* (short drawers) and *Kara* (steel bracelet). The Khalsa soon emerged as a valorous fighting unit. It enabled the Sikhs to form a state of their own under Maharaj Ranjit Singh.

The growth of the British power in India reduced the Sikhs to submission. But they continued to be fighters and soon came to be described as the fighting arm of the British. The majority of the Sikh population is found in the Punjab and the city of Delhi. Their most important sacred place is the Golden Temple at Amritsar.

Taoism. Lao-tse, the founder of Taoism, was born in China about the sixth century B.C. Lao-tse put down his teachings in a book called Tao-Teh-King, which became the Taoist Bible. "Tao" originally meant "road" or way, but later came to signify the perfect reality. Taoism preached goodness, simplicity, purity and gentleness in everyday life. The three jewels of Taoism are compassion, moderation and humility. Lao-tse taught what Christ later preached, the return of good for evil. "When you are reviled, cherish no resentment, be kind and generous without seeking any return".

Lao-tse's philosophy, highbrow as it was, failed to evoke response in the common man. The disciples of Lao-tse used "Tao-Teh-King" as a source book for magic and Taoism degenerated into mere ritual. By the middle of the second century B.C. Taoism had debased itself so far as to deify Lao-tse, who was worshipped with sacrifice.

Zoroastrianism. Zarathushtra or Zoroaster, the founder of Zoroastrianism, was born in Medea (modern Iran) about 660 B.C. He thought that life was a struggle between the forces of good and evil. The spirit of good was Ahura Mazda with its helper mithras, the Light. The evil spirit was Angra Mainyu or Ahriman, the Lie Demon. Man could not be neutral in the struggle. He had to fight for right and live a righteous life. Those who lived righteously went to paradise which was a state of immortal holiness in thought, word and deed. The impious were condemned to an eternal hell of evil thoughts and deeds and physical torment. By 500 B.C. Zoroastrianism had become the leading faith in Persia and Medea.

The sayings of Zoroaster were gathered into a book, called Avesta or Zend Avesta, which became the Bible of the Persians.

The Zoroastrians who fled to India during the 8th century, were the ancestors of the present Parsi community in India.

CLASSICAL WRITERS

'The Classics' originally meant literature or art of ancient Greece and Rome. With the passage of time it acquired the broader sense of any literary or artistic work of the highest order, enduring interests, quality or style.

The following is a list of classical writers of *Sanskrit*, *Greek* and *Latin* with their important works, in the alphabetical order.

Aeschylus (526–456 B.C.) Athenian dramatist. *Prometheus Unbound, The Persians, The Seven against Thebes, Oresteia, etc.*

Aesop (c. 620–560 BC) Greek fabulist. *Aesop's Fables.*

Amaruka (7th century AD) Sanskrit poet. *Amaruka Sataka* (100 stanzas of Amaruka).

Anacreon (c. 6th century B.C.) Famous Greek lyric poet.

Aquinas, St. Thomas (c. 1225–1274) Italian philosopher and theologian. *Summa Theologica, Summa Contra Gentiles.*

Aristophanes (c. 444–c. 385 B.C.) Athenian satirist and comic poet. *Lysistratea, Birds, Peace, Acharnians* etc.

Aristotle (384–322 B.C.) Greek Philosopher. *Rhetorics, Politics, Natural History, Poetics.*

Asvagosha (A.D. 1st cent.) Sanskrit poet. *Buddhacharita* (Story of Buddha).

Bana (A.D. 7th cent.) Sanskrit prose writer. *Harshacharita* (Story of Harsha), *Kadamabari,* a romantic story.

Bhadrabahu (4th cent. B.C.) *Kalpasutra* (a manual on ceremonies).

Bharavi (A.D. 6th cent.) Sanskrit poet, *Kiratharjuneeya* (Arjuna and Kiratha).

Bhatti (A.D. 7th cent.) Sanskrit poet. *Bhattikavya* (Bhatti's poem), a story of Rama. (100 Stanzas on morals).

Bhartruhari (A.D. 7th cent.) Sanskrit poet. *Nitishataka Shrinyaran Shataka* (100 stanzas on love), *Bhaktishataka* (100 stanzas on piety).

Bhasa (A.D. 5th cent.) A prolific Sanskrit writer. Wrote 13 plays. *Swapna Vasavadatta* (Vasavadatta's Vision), *Pratijna Yaugandharayana* (Vow of Yaugandharaya), *Charudatta.*

Bhavabhuti (A.D. 8th cent.) Sanskrit dramatist. *Malathimadhava* (story of Malathi and Madhava). *Mahaviracharita* (Story of the Great Hero), *Uttararamacharita* (Later deeds of Rama).

Bilhana (A.D. 12th cent.) Sanskrit poet. *Vikramankadevacharita* (Story of Vikramanka—Chalukyan emperor), *Chaurapanchasika* (Fifty stanzas on the thief).

Dandin (7th cent. A.D.) Sanskrit prose writer. *Dasakumara Charita* (Tales of the Ten Princes).

Diogenes (412–323 B.C.). Greek philosopher, founder of Cynic philosophy.

Epicurus* (342–270 B.C) Greek philosopher, founder of the Epicurean School. *Letters to Herodotus, Menocecus and others, De rerum natura.*

Euripides (480–406 B.C) Greek dramatist. *Alcestis, Bacchae.*

Gunadhya (1st cent. A.D.) Sanskrit writer. *Brahat Katha* (the great story), a collection of many stories.

Hala (Satavahana King) (1st cent. A.D.) Sanskrit poet. *Saptasati* (Seven Hundred Verses).

Herodotus (c. 485–425 B.C.) Greek historian. *History of the Persian Invasion of Greece.*

Homer (c. 700 B.C.) Greek epic poet. *Illiad, Odyssey.*

Horace (65–8 B.C.) Latin poet. *Satires, Epodes, Odes.*

Jayadeva (12th cent. A.D.) Sanskrit poet. *Gita Govinda* (Song of Govinda).

Jimutavahana (12th cent. A.D.) *Dayabhaga,* a treatise relating to Hindu inheritance—part of a great compilation, *Dharma Sutra.*

Juvenal (Decimus Junius Juvenalis) (60–140), Latin poet. *Satires.*

Kalhana (12th cent. A.D.) Sanskrit writer. *Rajatharangini* (River of Kings—a story of the kings of Kashmir).

Kalidasa (5th cent. A.D.) The greatest Sanskrit poet. Plays: *Malavikagnimitra* (Malavika and Agnimitra—a comedy of harem intrigue), *Vikramorvasiyam* (Urvasi won by valour), *Abhijnna Sakunthalam* (Recognition of Sakunthala). Epics: *Raghu Vamsa* (Dynasty of Raghu), *Kumara Sambhavaom* (Birth of the War god). Lyrics: *Meghdoot* Cloud Messenger), *Ritu Samhara* (Garland of Seasons).

Kautilya (Chanakya) (4th cent. B.C.) was the Chief Minister of Chandragupta Maurya. A well-seasoned politician, he practised Machiavellian tactics many centuries before Machiavelli. The only work attributed to him is *Artha Sastra* (Science of Statecraft).

Kumaradasa (6th cent. A.D.) Sanskrit poet. *Janakiharana* (Abduction of Janaki).

Magha (7th cent. A.D.) Sanskrit poet. *Sisupala Vadhom* (Slaying of Sisupala).

Mahendra Vikraman (a Pallava King) Sanskrit poet. *Matta Vilasa* (Sport of Drunkard).

Manu (2000 B.C.) (legendary author) Sanskrit law-giver. *Manu Smrithi* (The Code of Manu).

Narayana (12th cent. A.D.) Sanskrit story teller. *Hitopadesa* (Salutary Advice)—selected stories from *Panchathanthra.*

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* Epicurean, today, means one who has fine tastes in eating and drinking. This is unfortunate, for Epicurus was a confirmed ascetic, who advocated intellectual pleasures and not the appeasement of physical appetites.

Naya Chandra Suri (14th cent.) Sanskrit poet. *Hammira Mahakavya* (Epic of Hammira).

Ovid (Publius Ovidius Naso) (43 B.C.–16 A.D.) Latin poet. *Tristia, Amores, Persephone Rapta.*

Panini (4th cent. B.C.) Sanskrit grammarian. *Ashtadhyayi* (Book of Eight Chapters).

Patanjali (2nd cent. B.C.) Sanskrit grammarian. *Mahabhashyam* (Commentary on Panini).

Plato (427–347 B.C.) Greek philosopher. *The Republic, Apology of Socrates, Phaedo, Laws.*

Pliny the Elder (23–79 A.D.) Latin philosopher. His *Natural History* is an encyclopaedia of all scientific knowledge available at the time.

Plutarch (c. A.D. 46–120) Latin biographer, *Lives.*

Rajasekhara (10th cent. A.D.) *Karpoora Manjari*, a romantic drama.

Sandhyakara (12th cent. A.D.) Sanskrit poet. *Rama Charitha* (Story of Rama).

Sappho of Lesbos (early 6th cent. B.C.) Greek poetess of romance and amour. *Unrequited Love.*

Seneca, Lucius Annaeus (c. B.C.–56 A.D.). Stoic philosopher, tutor of Nero. Sentenced to end his own life, he killed himself courageously.

Somadeva (11th cent. A.D.) Sanskirt poet. *Katha Sarit Sagara* (Ocean of Story)—collection of stories.

Sophocles (495—406 B.C.) Greek dramatist. *Antigone, Oedipus the King, Oedipus at Colonus.*

Subandhu (7th cent. A.D.) Sanskrit poet. *Vasavadatta.*

Sudraka (5th cent. A.D.) Sanskrit dramatist. *Mrichhakatika* (Clay cart).

Tacitus, Caius Cornelius (55 c.–120) Latin historian. *Germania, Annals, Histories.*

Thucydides (c. 460–399 B.C.) Greek historian of the *Peloponnesian War.*

Vakpati (8th cent. A.D.) Sanskrit poet. *Ganda Vadha* (Slaying of Ganda) describes the exploits of Yasovarma, King of Kanyakubja.

Valmiki (6th cent. B.C.) Sanskrit epic poet. *Ramayana.*

Vatsyayana (5th cent. A.D.) Sanskrit writer. *Kama Sutra* (Art of Sex).

Vidyapathi (Legendary author) Sanskrit prose writer. *Pancha Tantra* Five Treatises)—a collection of tales.

Vijneswara (11th cent. A.D.) Sanskrit writer. *Mitakshara*, a treatise on the law of Hindu inheritance.

Virgil (Publius Vergilius Maro) (70–19 B.C.) Latin epic pet. *Aeneid, Georgics.*

Visakhadatta (6th cent. A.D.) Sanskrit dramatist. *Mudra Rakshasa* (Minister's Signet Ring). *Devi Chandragupta* (The Queen and Chandragupta)—political dramas.

Vyasa, (6th cent. B.C.) Sanskrit epic poet. *Mahabharata*, considered the longest epic in the world. It has nearly 100,000 stanzas.

Xenophon (444–359 B.C.) Greek soldier, historian and author. *Anabasis* (The Retreat of the Ten Thousand).

Zeno of Citium (c. 340–264 B.C.) Greek philosopher, founder of the Stoic school. Zeno taught in *Stoa Poikile* of Athens, hence *Stoic.*

WORLD CLASSICS

Neo-Classicism is the movement for a revival or adaptation of Classical style in literature, art, etc. However, those works of art or literature with qualities that transcend time can also be termed classics. Thus some of the modern literary or artistic pieces become classics of the first order.

The following is a list of some notable works and their authors

A China Passage: ***John Kenneth Galbraith***
A Critique of Pure Reason: ***Immanuel Kant***
A Dangerous Place: ***Daniel Patrick Moynihan***
A Doll's House: ***Ibsen***
Adonis: ***P.B. Shelley***
A Farewell to Arms: ***Ernest Hemingway***
A Guide for the Perplexed: ***E.F. Schumacher***
A Judge's Miscellany: ***M. Hidayatullah***
A Midsummer Night's Dream: ***William Shakespeare***
A Passage to England: ***Nirad C. Chaudhury***
A Passage to India: ***E.M. Forster***
A Personal Adventure: ***Theodore H. White***
A Prisoner's Scrapbook: ***L.K. Advani***

A Sense of Time: *H.S. Vatsyayan*
A Spaniard in the Works: *John Lennon*
A Tale of Two Cities: *Charles Dickens*
A Thousand Days: *Arthur M. Schlesinger*
A View from Delhi: *Chester Bowles.*
A Village by the Sea: *Anita Desai*
A Voice for Freedom: *Nayantara Sahgal*
A Week with Gandhi: *Louis Fischer*
A Woman's Life: *Guy de Maupassant*
Adam Bede: *George Eliot*
Adhe Adhure: *Mohan Rakesh*
Adventures of Tom Sawyer, Adventures of Huckleberry Finn. *Mark Twain (Samuel Langhorne Clemens)*
Adventures of Sherlock Holmes: *Arthur Conan Doyle*
Advice and Consent: *Allen Drury*
Affluent Society: *John Kenneth Galbraith*
Age of Reason: *Jean Paul Sartre*
Agni Veena: *Kazi Nazrul Islam*
Agony and the Ecstasy: *Irving Stone*
Airport: *Arthur Hailey*
Akbarnama: *Abul Fazal*
Alice in Wonderland: *Lewis Carroll*
All's Well that Ends Well: *William Shakespeare*
All Quiet on the Western Front: *Erick Maria Remarque*
All the President's Men: *Carl Bernstein & Bob Woodward*
All the Prime Minister's Men: *Janardan Thakur*
All Things Bright and Beautiful: *James Herriot*
Amar Kosh: *Amar Singh*
An American Tragedy: *Theodore Dreiser*
An Autobiography: *Jawaharlal Nehru*
An Eye to China: *David Selbourne*
An Idealist View of Life: *Dr. S. Radhakrishnan*
An Unknown Indian: *Nirad C. Choudhury*
Anandmath: *Bankim Chandra Chatterjee*
And Quiet Flows the Don: *Mikhail Sholokhov*
Androcles and the Lion: *George Bernard Shaw*
Animal Farm: *George Orwell*
Anna Karenina: *Leo Tolstoy*
Answer to History: *Mohammad Reza Pahlavi*
Antony and Cleopatra: *William Shakespeare*
Ape and Essence: *Aldous Huxley*
Apple Cart: *George Bernard Shaw*
Area of Darkness: *V.S. Naipaul*
Arms and the Man: *George Bernard Shaw*
Around the World in Eighty Days. *Jules Verne*
Arrangement, The: *Elia Kazan*
Arrowsmith: *Sinclair Lewis*
As You Like It: *William Shakespeare*
Asia and Western Dominance: *K.M. Panikkar*
Asian Drama: *Gunnar Myrdal*
August 1914: *Alexander Solzhenitsyn*
Autobiography of an Unknown Indian: *Nirad C. Choudhury*
Autumn Leaves: *O. Pulla Reddi*

Babbit: *Sinclair Lewis*
Back to Methuselah: *George Bernard Shaw*
Bandicoot Run. *Manohar Malgonkar*

Diary of Anne Frank

More than 40 years after Anne Frank died in a Nazi concentration camp, the most complete version of her diary yet published has been brought out by the Dutch government.

The 714-page volume compiled by researchers at the Dutch War Documentation Institute contains transcripts of every surviving scrap of paper written by Frank—including the 1942-44 diary written in two school notebooks and loose leaf pages while the Frank family lived in hiding in Amsteradam—except for some material about her mother and ‘unspecified details’’ deleted at the request of her father's second wife, Elfriede Frank Markovitz.

The 1947 Dutch edition of the diary was compiled from two manuscripts, one original and one edited. Both were cut, edited and spliced by the Dutch publisher and by Anne's father, Otto Frank, who died in 1980.

He was the only member of his family to survive the Holocaust.

Bangladesh: The Unfinished Revolution: *Lawrence Liftschultz*
Banyan Tree, The: *Hugh Tinker*
Beast and Man: *Murry Midgley*
Beginning of the Beginning: *Bhagwan Sri Rajneesh*
Ben Hur: *Lewis Wallace*
Bermuda Triangle: *Berlitz*
Best and the Brightest, The: *David Halberstam*
Beyond Modernisation, Beyond Self: *Sisirkumar Ghose*
Bharat Bharati: *Maithili Saran Gupta*
Big Fisherman, The: *Lloyd Douglas*
Biographia Literaria: *Samuel Taylor Coleridge*
Black Wednesday: *Promila Kalhan*
Blind Ambitions: *John Dean*
Blind Beauty: *Boris Pasternak*
Bliss was it in that Dawn: *Minoo Masani*
Bloodline: *Sidney Sheldon*
Born Free: *Joy Adamson*
Bread, Beauty and Revolution: *Khwaja Ahmad Abbas*
Breakthrough: *Gen. Moshe Dayan*
Bride's Book of Beauty, The: *Mulk Raj Anand*
Brothers Karamazov: *Feodor Dostoyevsky*
Bubble, The: *Mulk Raj Anand*
Butterfield 8 *John O' Hara*

By Love Possessed: *James Gould Cozzens*

Caeser and Cleopatra: *George Bernard Shaw*
Cancer Ward: *Alexander Solzhenitsyn*
Candida: *George Bernard Shaw*
Candide: *Voltaire*
Canterbury Tales: *Geoffrey Chaucer*
Cardinal, The: *Henry Morton Robinson*
Centennial: *James A. Michener*
Chandalika: *Rabindra Nath Tagore*
Chemmeen: *Thakazhi Sivasankara Pillai*
Cherry Orchard: *Anton Chekov*
Chesapeake: *James A. Michener*
Chidambara: *Sumitranandan Pant*
Childe Harold: *Lord Byron*
China's Watergate: *Leo Goodstadt*
Chinese Betrayal: *B.N. Malik*
Chitra:*Rabindra Nath Tagore*
Chithirappaavai: *P.V. Akilandam*
Choma's Drum: *K. Shivaram Karanth*
Chronicle of a Death Foretold: *Gabriel Garcia Marquez*
Class, The: *Erich Segal*
Climate of Treason: *Andrew Boyle*
Comedy of Errors: *William Shakespeare*
Common Sense: *Thomas Paine*
Communist Manifesto: *Karl Marx*
Confessions: *Jean Jacques Rousseau*
Confessions of a Lover: *Mulk Raj Anand*
Confessions of an Opium Eater, The: *Thomas Dequincey*
Confidential Clerk: *T.S. Eliot*
Conquest of Self: *Mahatma Gandhi*
Continent of Circe: *Nirad C Choudhury*
Coolie: *Mulk Raj Anand*
Count of Monte Cristo: *Alexander Dumas*
Coup, The: *John Updike*
Court Dancer, The: *Rabindra Nath Tagore*
Coverly Papers: *Joseph Addison*
Crescent Moon: *Rabindra Nath Tagore*
Crime and Punishment: *Feodor Dostoyevsky*
Crisis into Chaos: *E.M.S. Namboodiripad*
Cry My Beloved Country: *Alan Paton*
Culture in the Vanity Bag: *Nirad C. Choudhury*
Curtain Raisers: *K. Natwar Singh*

Darkness at Noon: *Arthur Koestler*
Dark Room, The: *R.K. Narayan*
Das Kapital: *Karl Marx*
David Copperfield: *Charles Dickens*
Dean's December, The: *Saul Bellow*
Death of a City: *Amrita Pritam*
Death of a Patriot: *R.E. Harrington*
Death of a President: *William Manchester*
Debacle: *Emile Zola*
Decameron: *Giovanni Boccaccio*
Decline and Fall of the Roman Empire: *Edward Gibbon*
Decline and Fall of Indira Gandhi: *D. R. Mankekar & Kamala Mankekar*
Democracy means Bread and Freedom: *Piloo Mody*
Democracy Redeemed: *V.K. Narasimhan*
Descent of Man: *Charles Darwin*
Deserted Village: *Oliver Goldsmith*
Devdas: *Sharat Chandra Chatterjee*
Dilemma of Our Time: *Harold Joseph Laski*
Diplomacy in Peace and War: *T.N. Kaul*
Discovery of India: *Jawaharlal Nehru*
Distant Drums: *Manohar Malgonkar*
Divine Comedy: *Alighieri Dante*
Divine Life: *Swami Sivananda*
Doctor's Dilemma: *George Bernard Shaw*
Dr. Jekyll and Mr. Hyde: *Robert Louis Stevenson*
Dr. Zhivago: *Boris Pasternak*
Don Juan: *Lord Byron*
Don Quixote: *Miguel de Cervantes*
Durgesh Nandini: *Bankim Chandra Chatterjee*
Dynamics of Social Change: *Chandra Shekhar*

Earth: *Emile Zola*
Economic Planning of India: *Ashok Mehta*
Economics of the Third World: *S.K. Ray*
Education of Public Man, The: *Hubert Humphrey*
Elegy written in a Country Churchyard: *Thomas Gray*
Emma: *Jane Austen*
Ends and Means: *Aldous Huxley*
Envoy to Nehru: *Escott Reid*
Essays for Poor to the Rich: *John Kenneth Galbraith*
Essays of Elia: *Charles Lamb*
Essays on Gita: *Sri Aurobindo Ghosh*
Eternal Himalayas: *Major H.P.S. Ahluwalia*
Executioner's Song: *Norman Mailer*
Expanding Universe: *Arthur Stanley Eddington*
Experiments with Untruth: *Michael Henderson*
Eye of the Storm, The: *Patrick White*

Face to Face: *Lasse & Mrs. Lisa Berg*
Faces of Everest: *Major H.P.S. Ahluwalia*
Family Reunion: *T.S. Eliot*
Far from the Madding Crowd: *Thomas Hardy*
Far Pavilions, The: *M.M. Kaye*
Faraway Music, The: *Svetlana Allilueva*
Farewell the Trumpets: *James Morris*
Farewell to Arms: *Ernest Hemingway*
Farm House: *George Orwell*
Father and Sons: *Ivan Turgenev*
Faust: *J.W. Von Goethe*
Fidelio: *L. Beethoven*
Fifth Horseman, The: *Larry Collins & Dominique Lapierre*
Final Days, The: *Bob Woodward & Carl Bernstein*
Finding a Voice—Asian Women in Britain: *Amrit Wilson*
Fire Next Time, The: *James Baldwin*
First Circle: *Alexander Solzhentisyn*
Flames from the Ashes: *P.D. Tandon*
Flounder, The: *Gunter Grass*
Food, Nutrition and Poverty in India: *V.K.R.V. Rao*

or Whom the Bell Tolls: *Ernest Hemingway*
orbidden Sea, The: *Tara Ali Baig*
orsyth Saga: *John Galsworthy*
ortynine Days: *Amrita Pritam*
reedom at Midnight: *Larry Collins & Dominique Lapierre*
rench Revolution: *Thomas Carlyle*
riends and Foes: *Sheikh Mujibur Rahman*
rom India to America: *S. Chandrasekhar*

Ganadevata: *Tara Shankar Bandapadhyaya*
Gandhi and Stalin: *Louis Fischer*
Gardener: *Rabindra Nath Tagore*
Gathering Storm: *Winston Churchill*
Ghasiram Kotwal: *Vijay Tendulkar*
Gitanjali: *Rabindra Nath Tagore*
Glimpses of World History: *Jawaharlal Nehru*
Godan: *Prem Chand*
Godfather, The: *Mario Puzo*
Golden Threshold: *Sarojini Naidu*
Gone with the Wind: *Margaret Mitchel*
Good Earth: *Pearl S. Buck*
Grammar of Politics: *Harold Joseph Laski*
Grapes of Wrath: *John Steinbeck*
Great Challenge, The: *Louis Fischer*
Great Expectations: *Charles Dickens*
Great Gatsby: *F. Scott Fitzgerald*
Great Tragedy: *Z.A. Bhutto*
Guide: *R.K. Narayan*
Gulag Archipelago: *Alexander Solzhenitsyn*
Gulliver's Travels: *Jonathan Swift*

Hamlet: *William Shakespeare*
Heat and Dust: *Ruth Prawer Jhabwala*
Heir Apparent: *Dr. Karan Singh*
Heroes and Hero Worship: *Thomas Carlyle*
Himalayan Blunder: *Brigadier J.P. Dalvi*
Hindu View of Life: *Dr. S. Radhakrishnan*
Hinduisim: *Nirad C. Choudhury*
House Divided: *Pearl S. Buck*
Human Factor: *Graham Greene*
Humboldt' Gift, The: *Saul Bellow*
Hunchback of Notre Dame: *Victor Hugo*
Hungry Stones: *Rabindra Nath Tagore*

I follow the Mahatma: *K.M. Munshi*
Idiot, The: *Feodor Dostoyevsky*
Idols: *Sunil Gavaskar*
If I am Assassinated: *Z.A. Bhutto*
Importance of Being Earnest: *Oscar Wilde*
In Evil Hour: *Gabriel Garcia Marques*
In Memoriam: *Alfred Lord Tennyson*
In Search of Gandhi: *Richard Attenborough*
In Search of Identity: *Anwar el-Sadat*
India, The Critical Years: *Kuldip Nayar*
India Changes: *Taya Zinkin*
India Discovered: *John Keay*
India Divided: *Rajendra Prasad*
India of Our Dreams: *M.V. Kamath*
India Remembered: *Percival & Margaret Spear*
India Wins Freedom: *Abdul Kalam Azad*
Indian Philosophy: *Dr. S. Radhakrishanan*

British Prime Monster!

The story is told of an 85-year old British biologist, who was persuaded by compilers of **Encyclopaedia Brittanica** to read, check and update the entry on biology printed earlier.

For over 200 years, the encyclopaedia is the world's most respected reference book. The compilers were aghast when the old professor discovered many omissions, mistakes and inaccuracies in the biology entry, and demanded to know which fool had written the stuff. A quest through old files revealed, to the embarrassment of the compilers, that the original writer was the self-same professor.

Clearly, science had meanwhile taken great strides, in the 40 years intervening. However, no such lovable quirk attaches to the latest story in which one of the reference book's 150 editors has been dismissed.

The proof-readers complained that in many places, the name of Jesus Christ had been deleted, and that of Allah substituted in a forthcoming computerised edition. Also, names of some executives of the encyclopaedia had been freshly inserted as historical figures in somewhat unflattering circumstances.

The compilers used the computer to find when, where and how changes had been made, mischievously. The dismissed editor will have to pay compensation for the extra work involved. Sometimes, even the printer's devils reveal Freudian slips

We hear the **Hansard** for the Ireland parliament will now be printed elsewhere. The earlier press, it was found, had some 'devil' who insisted on describing Mrs Thatcher as the British Prime **Monster** in one place, the British **Crime** Minister in another and the **Britshit** Prime minister in a third place. Sanctity of the printed word is very vital.

India's China War: *Neville Maxwell*
India's Priceless Heritage: *N.A. Palkhivala*
Indira Gandhi's Emergence and Style: *Nayantara Sehgal*
Indira's India: *S. Nihal Singh*
Inside Asia, Inside Europe, Inside Africa, etc.: *John Gunther*
Intimacy: *Jean Paul Sartre*
Invisible Man: *H.G. Wells*
Isabella: *John Keats*
Islamic Bomb: *Stev Weissman & Herbert Krousney*
Island in the Streams: *Ernest Hemingway*
Is Paris Burning?: *Larry Collins & Dominique Lapierre*
Ivanhoe: *Sir Walter Scott*

Jane Eyre: *Charlotte Bronte*
Jean Christopher: *Romain Rolland*
Jobs for the Millions: *V.V. Giri*
Julius Caesar: *William Shakespeare*
Jungle Book: *Rudyard Kipling*

Kayar: *Thakazhi Sivasankara Pillai*
Kagaz Te Kanwas: *Amrita Pritam*
Kamayani: *Jai Shankar Prasad*
Kanthapura: *Raja Rao*
Kapal Kundala: *Bankim Chandra Chatterjee*
Kenilworth: *Sir Walter Scott*
Kidnapped: *Robert Louis Stevenson*
Kim: *Rudyard Kipling*
King of Dark Chamber: *Rabindra Nath Tagore*
King Lear: *William Shakespeare*
Kissinger Years, The: *T.N. Kaul*
Kore Kagaz: *Amrita Pritam*
Kubla Khan: *Samuel Taylor Coleridge*

Lady Chatterley's Lover: *D.H.Lawrence*
Last Days of Pompeii: *Edward George Lytton*
Laws Versus Justice: *V.R. Krishna Iyer.*
Last Maharaja, The: *Jean Louis Nou & Jacques Pouchepadass*
Last Things: *C.P. Snow*
Lead Kindly Light: *Vincent Shean*
Leaders: *Richard Nixon*
Leaves of Grass: *Walt Whitman*
Le Contract (Social Contract): *J.J. Rousseau*
Les Miserables: *Victor Hugo*
Letters From the Field: *Margaret Mead*
Leviathan: *Thomas Hobbes*
Life Divine: *Sri Aurobindo*
Life of Dr. Johnson: *James Boswell*
Lolita: Vladimir Nabakov
Lost Honour: *John Dean*
Love Story: *Erich Segal*

Macbeth: *William Shakespeare*
Madame Bovary: *Gustav Flaubert*
Magic Mountain: *Thomas Mann*
Main Street: *Sinclair Lewis*
Major Barbara: *George Bernard Shaw*
Making of a Midsummer Night's Dream, The: *David Selbourne*
Man and Superman: *George Bernard Shaw*
Man Eaters of Kumaon: *Jim Corbett*
Man of Destiny: *George Bernard Shaw*
Mankind and Mother Earth: *Arnold Toynbee*
Many Worlds: *K.P.S. Menon*
Marriage and Morals: *Bertrand Russel*
Masters, The: *C.P. Snow*
Maurice: *E.M. Forster*
Mayor of Casterbridge: *Thomas Hardy*
Mein Kampf: *Adolf Hitler*
Memories of Hope: *Gen. Charles de Gaulle*
Men Who Killed Gandhi, The: *Manohar Malgonkar*
Merchant of Venice The: *William Shakespeare*
Middle Ground, The: *Margaret Drabble*
Middle March: *George Eliot*
Midnight's Children: *Salman Rushdie*
Mill on the Floss: *George Eliot*
Miser, The: *Moliere*
Moby Dick: *Hermann Melville*
Moon and Six Pence: *W. Somerset Maugham*
Moonlight Sonata: *L.B. Beethoven*
Mother: *Maxim Gorky*
Mother India: *Katherine Mayo*
Mrs. Gandhi's Second Reign: *Arun Shourie*
Much Ado About Nothing. *William Shakespeare*
Murder in the Cathedral: *T.S. Eliot*
My Days: *R.K. Narayan*
My Experiments with Truth: *Mahatma Gandhi*
My India: *S. Nihal Singh*
My Life and Times: *V.V. Giri*
My Own Boswell: *M. Hidayatullah*
My Struggles: *E.K. Nayanar*
My Truth: *Indira Gandhi*
Naked Face, The: *Sidney Sheldon*
Nana: *Emile Zola*
New Dimensions of India's Foreign Policy: *Atal Behari Vajpayee*
Nineteen Eighty Four: *George Orwell*
Nisheeth: *Uma Shankar Joshi*

O' Jerusalem: *Larry Collins & Dominique Lapierre*
Odakkuzhal *G. Shankara Kurup*
Of Human Bondage: *W. Somerset Maugham*
Old Man and the Sea: *Ernest Hemingway*
Oliver Twist: *Charles Dickens*
Oliver's Story: *Erich Segal*
One day in the Life of Ivan Denisovich: *Alexander Solzhenitsyn*
One Hundred Years of Solitude: *Gabriel Garcia Marquez*
One World: *Wendell Wilkie*
One World and India: *Arnold Toynbee*
One World to Share: *Shridhath Ramphal*
Origin of Species: *Charles Darwin*
Oru Desathinte Katha: *S.K. Pottekkatt*
Othello: *William Shakespeare*

Harvard is 350

"In any crowd, you can always tell a Harvard man, but you can't tell him much!" it is said. such has been the quality and class of education in the high halls and serene campus of Harvard in cambridge, Massachusettes. There is only one Harvara just as there is only one Oxford, Cambridge, Viswabharati or Sorbonne.

Wade into the names of Harvard. University's former students and you soon feel not just the undertow of 350 years but also the force, the weight and sound, of Harvard's; pervasive influence.

Remember George Starkey, class of 1646? He was an alchemist, a living link with the medieval world.

Consider Ralph Waldo Emerson, class of 1821. The great transcendentalist revisited his old college, years after graduating, and reported feeling the presence of "ghosts". The college was already two centuries old, its founding spirits as remote from Emerson as George Washington is from us.

Consider the liberal professorial brain trusts of President Franklin D. Roosevelt, class of 1904, and President John F Kennedy, class of 1940. The Washington of President Ronald Reagan may include fewer Harvard College, the undergraduates school, and of Harvard's professional schools: Caspar W. Weinberger, secretary of defense; Donald T. Regan, White House chief of staff; Education Secretary Willian J. Bennett; Interior Secretary Donald P. Hodel; Transportation Secretary Elizabeth Dole; Federal Reserve Chairman Paul A. Volcker, and Assistant Secretary of State Elliott Abrams among others.

Harvard has left a deep impress on American culture and society ever since it was founded in 1636, in the reign of Charles I, and named after John Harvard. a young minister who, when the died, left the college 400 books and a valuable interest in a London tavern

The present President of Harvard is Mr. Derek Bok

Other Side of Midnight, The: *Sidney Sheldon*
Our Films Their Films: *Satyajit Ray*

Painted Veil: *W. Somerset Maugham*
Painter of Signs: *R.K. Narayan*
Pakistan Cut to Size: *D.R. Mankekar*
Panchatantra: *Vishnu Sharma*
Paradise Lost: *John Milton*
Pather Panchali: *Bibhuti Bhushan*
Pere Goriot: *Honore de Balzac*
Peter Pan: J.M. Barrie
Pickwick Papers: *Charles Dickens*
Pilgrim's Progress: *John Bunyan*
Portrait of India: *Ved Mehta*
Post Office: *Rabindra Nath Tagore*
Power and Glory: *Graham Greene*
Power That Be, The: *David Halberstan*
Prathama Pratishruti: *Ashapurna Devi*
Prelude: *William Wordsworth*
Price of Power: Kissinger in the Nixon White House: *Seymour M. Hersh*
Pride and Prejudice: *Jane Austen*
Prince: *Niccolo Machiavelli*
Prison Diary: *Jayaprakash Narayan*
The Prisoner of Zenda: *Anthony Hope*
Promises to Keep: *Chester Bowles*
Prussian Nights: *Alexander Solzhenitsyn*
Pygmalion: *George Bernard Shaw*
R Document, The: *Irving Wallace*
Rage of Angels: *Sidney Sheldon*
Ragtime: *E.L. Doctorow*
Rain King, The: *Saul Bellow*
Rangbhoomi: *Prem Chand*
Rape of Bangladesh: *Anthony Mascarenhas*
Rape of the Lock: *Alexander Pope*
Rebel, The: *Albert Camus*
Rebirth: *Leonid Brezhnev*
Red and Black, The: *Stendhal*
Red Badge of Courage: *Stephan Crane*
Red Star Over China: *Edgar Snow*
Reflections on the French Revolution: *Edmund Burke*
Return of the Native, The: *Thomas Hardy*
Riding the Storm: *Harold MacMillan*
Rights of Man: *Thomas Paine*
Robe, The: *Lloyd C. Douglas*
Robinson Crusoe: *Daniel Defoe*
Romeo and Juliet: *William Shakespeare*
Rubaiyat-i Omar Khayyam: *Edward Fitzgerald*

Saket: *Maithili Sharan Gupta*
Sanctuary: *William Faulkner*
Scarlet Letter: *Nathaniel Hawthorne*
Seven Lamps of Architecture: *John Ruskin*
Seven Summers: *Mulk Raj Anand*
Shadow from Ladakh: *Bhabani Bhattacharya*
Shape of Things to Come: *H.G. Wells*
She Stoops to Conquer: *Oliver Goldsmith*
Ship of Fools: *Katherine Anne Porter*
Shoes of the Fisherman, The: *Morris L. West*
Six Characters in Search of an Author: *Lugi Pirandello*
Social Contract The: *Rousseau*
Songs of India, The: *Sarojini Naidu*
Sons and Lovers: *D.H. Lawrence*
Sound and Fury, The: *William Faulkner*
Spirit of the Age: *William Hazlitt*
Story of a Real Man: *Nikolayev Polevoi*
Story of My Experiments with Truth: *Gandhi*
Story of My Life: *Moshe Dayan*
Strangers and Brothers: *C.P. Snow*
Sunny Days: *Sunil Gavaskar*
Swami and Friends: *R.K. Narayan*
Sword and the Sickle: *Mulk Raj Anand*

Talisman: *Sir Walter Scott*
Tarzan of the Apes: *Edgar Rice Burroughs*
Tempest: *William Shakespeare*
Thank You, Jeeves: *P.G. Wodehouse*
Thirteenth Sun, The: *Amrita Pritam*
Thorn Birds: *Colleen McCulough*
Through the Indian Looking Glass: *David Selbourne*
Thus Spake Zarathustra: *Friedrich Wilhelm Nietzsche*
Time Machine: *H.G. Wells*
Tom Jones: *Henry Fielding*
Treasure Island: *Robert Louis Stevenson*
Trial, The: *Franz Kafka*
Trinity: *Leon Uris*
Tropic of Cancer: *Henry Miller*
Tryst with Destiny: *S. Gopalan*
Twelfth Night: *William Shakespeare*
Two leaves and a Bud: *Mulk Raj Anand*
Two Women: *Alberto Moravia*

Ulysses: *James Joyce*
Uncle Tom's Cabin: *Harriet Beecher Stowe*
Unto This Last: *John Ruskin*
Untold Story: General B.M. Kaul
Utopia: *Thomas Moore*
Valley of Dolls: *Jacqueline Susann*
Vanity Fair: *William Thackeray*
Vendor of Sweets, The: *R.K. Narayan*
Vicar of Wakefield: *Oliver Goldsmith*

Waiting for Godot: *Thomas Becket*
Wake Up India: *Annie Besant*
War and Peace: *Leo Tolstoy*
Waste Land: *T.S. Eliot*
Way of all Flesh: *Samuel Butler*
Wealth of Nations: *Adam Smith*
We Indians: *Khushwant Singh*
Westward Ho: *Charles Kingsley*
Where the Grass is Greener: *David M. Smith*
White House Years: *Dr. Henry Kissinger*
Without Fear or Favour: *Harrison E. Salisbury*
Witness to an Era: *Frank Moraes*
Wuthering Heights: *Emily Bronte*

Yayati: *V.S. Khandekar*
Year of the Upheaval: *Henry Kissinger*
Yesterday and Toady: *K.P.S. Menon*

Zulfi, My friend: *Piloo Mody*

THE SUPERLATIVES

The Superlatives are broadly classified into the Human World, the Natural World and the Scientific World. Man's achievements on the Earth and in outer space are also highlighted.

Human World. *Tallest Man recorded:* Robert Pershing Wadlow (1918-40) born at Alton, Illinois, USA; 272 cm (8 ft. 11.5 in).

Tallest Living Man: Gabriel Estevao Monjane, born 1944, Mozambique. 8 ft. 0.¾ in. (245.7 cm.) (The Pakistani Mohamed Aalam Channa's claim to this honour proved to be a tall claim.)

Tallest Woman recorded: Zeng Jinlian (pronounced San Chung Lin) (964-82) of China. 247 cm (8 ft. 1 in).

Tallest Living Woman: Sandy Allen of Canada: 271.7 cm (7 ft. 7¼ in). She now weighs 462 lb (210 kg).

Heaviest Man: Jon Brower Monnoch (1741-83), Washington, USA. He weighed 635 Kg (1400 lb).

Heaviest Woman: Percy Pearl of Washington, USA (1926-1972). 399 kg (880 lb).

Oldest Man ever lived (Authenticated): Shigechiyo Izumi, Japan (1865-1983). Born on June 29, 1965, he was recorded as a 6-year-old in Japan's first census of 1871. He died at the age of 118.

Most Children: The greatest officially recorded number of children produced by a mother is 69 by the first of the two wives of Feodor Vassilyev (1707-1782) of USSR. In 27

The old and the new: Industrial World strode proudly into the 100th anniversary of automobiles. The first car was manufactured in Germany by Carl Benz in 1885.

Record Problem!

Arthur Armitage (57) who weighs 305 kg., once billed Britain's heaviest man in the Guinness book of records, presented a weighty problem for 60 of his pals and the fire brigade in York.

Attending a reception for his friend's marriage in a pub Arthur fell from a chair and just could not get up on his own. Sixty guests tried to haul him up, but the problem proved too hefty for them and they sent for the fire brigade.

The firemen did not find it an easy job. They tried to roll Arthur to the nearby stairs but failed. They tried strapping him with a sling, but it was too short.

Finally they succeeded in hauling him upright by tying lengths of water hoses around him. At least one fireman was injured when he was trapped when Arthur's weight shifted.

confinements she gave birth to 16 pairs of twins, 7 sets of triplets and 4 sets of quadruplets.

Most Prolific Mother (living): Leontina Albina (b. 1925), Chile. She was reported to be pregnant in Nov. 1980 having already produced 44 children.

First Siamese Twins: Chang and Eng Bunker (Known in Thailand as Chan and In) born at Meklong on May 11, 1811 of Chinese parents. They died within three hours of each other on Jan. 17, 1874, aged 62.

First Test Tube Baby: Louise Brown (5 lb 12 oz) (2.6 Kg) was delivered by Caesarian Section from Lesley Brown, 31, in Oldham General Hospital, Lancashire, England at 11.47 p.m. on July 25, 1978.

First Human Heart Transplant: Was performed on Louis Washkansky, 55, at the Groote Schuur Hospital, Cape Town, S.Aftrica on Dec. 3, 1967 by a team of 30 led by Prof. Christian Neethling Barnard. The donor was Miss Denise Ann Darvall, aged 25. Washkansky died on Dec. 21, 1967.

First Artifical Heart: Dr. Barney B. Clark, 61, of Wisconsin, USA received the first artificial heart on Dec 1-2, 1982 at the Utah Medical Centre, Salt Lake City, Utah. The Surgeon was Dr. William C de Vries. The heart was a mark 7 Jarvik 7 designed by Dr. Robert Jarvik. Dr. Clark died on March 23, 1983, 112 days later.

Natural World

Largest and Heaviest Animal: The Blue or Sulpher-bottom Whale. The largest speciman ever recorded was a female landed at Falkland Islands, during 1904-20. She measured 33.58 m (110 ft. 2.5 in) in length. Another female measuring 27.6 m (90 ft. 6 in) was caught in the Southern Ocean by the Soviet 'Slava' whaling fleet on March 20. 1947, weighed 190 tonnes.

Tallest Living Animal: the Giraffe, now found only in the dry Savannah and semi-desert areas of Africa. The tallest ever recorded was a Masai bull named 'George' received at Chester Zoo, England on Jan. 8, 1959, from Kenya. His horns almost touched the roof of the 20 ft. (6.09 m) high Giraffe House when he was 6 years old. George died on July 22, 1969.

Fastest Moving Animal: The Peregrine Falcon, which has been timed electronically at 350 km/h (217 m/h) in 1963 in Germany while making a stoop at a 45° angle of descent. The fastest bird in level flight is the white-throated Spinetail Swift of Asia. In 1942 air speed upto 171 km/h (106.25 m/h) was recorded for this species in the USSR.

Largest Living Animal: The African bush elephant. The average adult bull stands 10 ft. 6 in (3.2 m) at the shoulder and weighs 5.7 tonnes. The largest specimen ever recorded was a bull shot in Southern Angola on Nov. 7, 1974. It had a height of 13 ft (3.96 m).

Fastest Land Animal over short distance (ie upto 600 yd (549 m): The Cheetah or Hunting Leopard of the plains of East Africa, Iran, Turkmenia and Afghanistan, with a probable maximum speed of 60-63 m/h (95-101 km/h) over suitably level ground.

Tallest Tree: The redwood near coast of California. The tallest measured example is the 'Tallest Tree' in Red Wood Creek Grove, Humboldt County, California, discovered in 1963 to be 367.8 ft (112.1 m). It has a girth of 43 ft. 11 in (13.38 m).

Shortest Dwarf (living): *In July 1982 an unconfirmed height of 28 in (71 cm) was reported for a chicken farmer named Ghulam Ahmed Dar living near Srinagar in Kashmir.*

Human Computer: *Mrs. Shakuntala Devi of India demonstrated the multiplication of two 13 - digit numbers 7,686,369,774,870 × 2,465,099,745,779 picked at random by the Computer Department of Imperial College, London 18 June 1980, in 28 sec. Her correct answer 18,947,668,177,995,426,462,773,730.*

Greatest number of places of π (pi): *Rajan Srinivasan Mahadevan, 23, recited 'pi' from memory (in English) 31811 places in 3 hr. 49 min. (including 26 minutes of breaks) at the Lion Seva Mandir, Mangalore. His rate was 156.7 digits per minute.*

Longest Finger Nails: *The longest finger nails ever reported are those of Shridhal Chillal, (b. 1937) of Poona. The aggregate measurement, on 8 April 1985, was 143 in 363 cm for the 5 nails on his left hand (thumb 34½ in 86.4 cm). He last cut his nails in 1952.*

Longest Hair: *Swami Pandarasannadhi, the head of the Tirudaduturai monastery, Tanjore district, Madras, was reported in 1949 to have hair 26 ft. 792 m in length.*

INDIA IN THE GUINNESS BOOK

Longest Moustache: *The longest moustache on record was that of Masuriya Din (b. 1908), a Brahmin of the Partabgarh District in Uttar Pradesh. It grew to an extended span of 8 ft. 6 in. 259 m between 1949 and 1962.*

Operations (Most): *Padmabhushan Dr. M. C. Modi, a pioneer of mass eye surgery in India since 1943, has performed 833 cataract operations in a single working day.*

Most Recordings: *Miss Lata Mangeshkar (b. 1928) between 1948 and 1985 has reportedly recorded not less than 30,000 solo, duet and chorus backed songs in 20 Indian languages. She frequently had 5 sessions in a day and has 'backed' more than 2000 films.*

Longest marriage (World): *The longest recorded marriages are of 86 years between Sir Temulji Bhicaji Nariman and Lady Nariman from 1853 to 1940 resulting from a cousin marriage when both were five. Sir Temulji (b. 3 Sept. 1848) died, aged 91 years 11 months, in August 1940 at Bombay.*

Camping Out: *The silent Indian fakir Mastram Bapu has remained on the same spot by the roadside in the village of Chitra for 22 years 1960-82.*

Crawling: *Over a space of 15 months ending on 9 March 1985 Jagdish Chander, 32, crawled 1400 km. — 870 miles from Aligarh to Jamma to propitiate his favourite Hindu goddess Mata.*

Singing: *Acharya Prem Bhikuji started chanting the Akhand Ram Dhun in 1964 and devotees took this up in rotation completing their devotions 13 years later on 31 July 1977 at Jamnagar.*

Standing: *The longest period on record that anyone has continuously stood is for more than 17 years in the case of Swami Maujgiri Maharaj when performing the Tapasya or penance from 1955 to November 1973 in Shahjahanpur, Uttar Pradesh. When sleeping he would lean against a plank. He died aged 85 in Sept. 1980.*

Most Protracted Litigation: *The longest contested law suit ever recorded ended in Poona, on 28 April 1966, when Balasaheb Patloji Thorat received a favourable judgment on a suit filled by his ancestor Maloji Thorat 761 years earlier in 1205. The points at issue were rights of presiding over public functions and precedences at religious festivals.*

Most Prolific Murderers World: *It was established at the trial of Behram, the Indian thug, that he had strangled at least 931 victims with his yellow and white cloth strip or ruhmal in the Oudh District between 1790 and 1840.*

Lata: Most Prolific Singer

Crowds (Largest): *The greatest recorded number of human beings assembled with a common purpose was an estimated 12,700,000 at the Hindu festival of Kumbh-Mela, which was held at the confluence of the Yamuna (formerly called the Jumna), the Ganges and the invisible 'Sarasvati' at Allahabad, Uttar Pradesh, on 19 January 1977.*

Largest Funerals: *The funeral of the charismatic C. N. Annadurai (died 3 Feb. 1969) T. Nadu Chief Minister was, according to a police estimate, attended by 15 million.*

The youngest Gold Medalist: *Ved Prakash (India) won the light-flyweight wrestling title in 1970 aged probably 14, although one report gave his age as 12.*

Chess (origin): *The game originated in ancient India under the name Chaturanga (literally 'four corps' an army game).*

Individual Career Records — All First Class Cricket (FC) and Test Cricket (Test): *Batting — Sunil Gavaskar, India (b. 10 July, 1949) (av 50.61), India (106 Tests) — 1971-85.*

Most Massive Tree: Giant Sequoia named the 'General Sherman' standing 272.4 ft. (83.02 m) tall in the Sequoia National Park, California. It has a true girth of 79.8 ft. (24.32 m) above the ground. This tree has been estimated to contain the equivalent of 600,120 board feet of lumber sufficient to make 5,000,000,000 matches.

Most Massive Tree Canopy: The Great Banyan (Ficus bengalensis) in the Indian Botanical Garden, Calcutta where some 1,000 subsidiary trunks are formed from aerial roots. It covers some 4 acres (1.6 ha) and is believed to date from c. 1770.

Largest Forest: The vast Coniferous forests of the northern USSR lying mainly between latitude 55°N, and to Arctic Circle. The total wooded area amounts to 2,700,000,000 acres or 1100 million ha (25 percent of the world's forests), of which 38 percent is Siberian larch.

Largest Park: The Wood Buffalo National Park in Alberta, Canada established in 1922 has an area oif 11,172,000 acres (17,560 sq. miles or 4548 sq. km.)

Greatest Rainfall (24 hrs): 73.62 in or 1870 mm. Cilaos La Reunion, Indian Ocean, March 15-16-1952. Greatest Rainfall (Calendar month): 366.14 in or 9299 mm, Chirapunji, Meghalaya, India in July 1861. Greatest Rainfall (12 months): 1041.78 in (26,461 mm) Cherapunji, Meghalaya, India, 1-8-1860–31-7-1861.

Maximum Sunshine: 97 percent (over 4300 hrs), eastern Sahara, annual averave. Hottest place: (Annual mean): Dallol, Ethiopia: 94° F or 34.4 c (1960-66).

Longest Drought: c. 400 years to 1971. Desierto de Atacama, Chile.

Coldest Place (Extrapolated Annual Mean): Polus Nedostupnosti, pole of Cold (78° S (96°E), Antarctica, -72°F or -57.8°C. Coldest measured means: -70°F or -56.6°C. Plateau Station, Anarctica. Wettest place (Annual Mean): Mt.Wai-ale-ale (5.148 ft (1569 m) in Kauai, Hawaii, 451 in (11455 mm), average 1920-72. In 1948, 621 in (15773 mm).

Largest Ocean: the Pacific; representing 45.8 per cent the World's Oceans it covers an area of 64,186,000 sq. miles or 166240000 sq. Km.

Deepest part of Ocean: in the Marianas Trench in the Pacific Ocean; has a depth of 5968 fathoms (35,808 ft or 10914 m) or 6.78 miles (10.91 km).

Largest sea: the South China Sea with an area of 1,148,500 sq. miles or 2974600 sq. km.

Longest Straits: the Tatarskiy Proliv or Tartar Straits between Sakhalin Island and the USSR mainland, running from the Sea of Japan to Sakhalinsky Zaliv. This distance is 800 km or 497 miles-- thus marginally larger than the Malacca Straits.

Largest Gulf: the Gulf of Mexico, with an area of 580,000 sq. miles or 1500,000 sq. km. and a shoreline of 3100 miles or 4990 km from Cape Sable, Florida, to Cabo Catoche, Mexico.

Largest Bay: measured by shore-line length is Hudson Bay, Northern Canada, with a shoreline of 7,623 miles or 12268 km with an area of 317,500 sq. miles or 822300 sq. km. The area of Bay of Bengal is however 839,000 sq. miles or 217200 sq. km.

Largest Land Mass: The Eurasian land with an area (including Islands) of 20733,000 sq. miles or 53698,000 sq. km.

Smallest Land Mass: the Australian Mainland with an area of 2,941,526 sq. miles or 7618493 sq. Km which, together with Tasmania, New Zealand, New Guinea and the Pacific Islands is sometimes described as Oceaina.

Largest Peninsula: Arabia with an area of 1,250,000 sq. miles or 3250000 sq. km.

Largest Island: Discounting Australia, which is usually recorded as a continental land mass, the largest island is Greenland (Renamed Kalaatdlit Nunaat, May 1, 1979), with an area of about 840,000 sq. miles or 2175,000 sq. km.

Greatest Archipelago: 3,500-mile or 5600-km long crescents of more than 13,000 islands which form Indonesia.

Highest Mountain: Eastern Himalayan peak of 29,028 ft. or 8848 metre above sea level on the Tibet- Nepal border, named Mount Everest having 5½ mile or 8.85 km height. The peak was named after Col. Sir George Everest (1790–1866), formerly Surveyor General of India.

Largest Lake (Inland Sea): the Kaspiskoye More (Caspian Sea) in the Southern USSR and Iran. It is 760 miles or 1225 km long and its total area is 360700 sq. km or 13,900 sq. miles.

argest Fresh Water Lake: Lake Superior, ne of the Great Lakes of N. America, has the reatest surface area in the world. Its total rea is 31800 sq. miles or 82350 sq. km. The esh Water Lake with the greatest volume is he Baykal, in Siberia, USSR, with an estimated volume of 5,520 cubic miles or 23000 cubic km.

Largest Desert: The Sahara in N. Africa. At its greatest length it is 3200 miles or 5150 km from east to west. From north to south, it is between 800 and 1400 miles or 1275 and 2250 km. Area covered by the desert is about 3,250,000 sq. miles or 8400000 sq. km.

Highest Waterfall: Salto Angel Falls in Venezuela on a branch of the river Carrao. It has a total depth of 3,212 ft or 979 metre.

Longest River: The two longest Rivers in the World are Amazon, flowing into the South Atlantic and the Nile, flowing into the Mediterranean. Which is longer is more a matter of definition than simple measurement. The Amazon has a length of 4007 miles or 6448 km. The length of the Nile is 4145 miles or 6670 km. However, the length of these rivers vary if measured in different courses.

SCIENTIFIC WORLD

Largest Planet: Jupiter, with an equatorial diameter of 88,846 miles or 142984 km and a polar diameter of 83,082 miles or 133708 km. is the largest of the 9 major planets, with a mass of 317.83 times, and a volume of 1,321.4 times that of the Earth.

Smallest Planet: Pluto with a diameter of about 3000 km or 1880 miles and the mass is about 1/500 of the Earth.

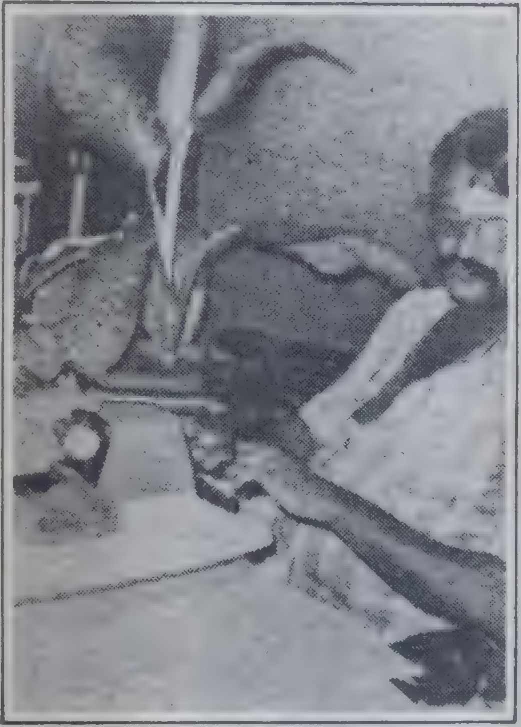
Fastest Planet: Mercury, which orbits the Sun at an average distance of 3,5983,100 miles or 579,092,00 km, has a period of revolution of 87.9686 days, so giving the highest average speed in orbit of 107030 mph or 172,248 km/h.

Earliest Spacecraft: Sputnik, owned by USSR, was the first artificial satellite successfully put into orbit on Oct. 4, 1957.

Earliest Manned Satellite: First successful manned space flight took off from USSR on April 12, 1961. Flight Major (later Col) Yuri Gagarin was the first cosmonaut.

Earliest Walk in Space: The earliest instance of Astronaut floating free outside a space vehicle was by Edward H White, for 21 minutes on June 3, 1965; Space craft- Gemini-IV.

World Record in Typing



Bombay's 44-year old Shambhoo Govind Anbhawane broke the 17-year old Guinness record for marathon typing – 120 hours and 15 minutes at 12.15 pm on August 23, 1986.

Man's Longest Time in Space: 221 days by Anatoly Berezovoi and Valentin Lebedev on board the Research Station 'Salyut-7'

Largest Space Object: The heaviest object orbited is the Apollo–XV, which weighed 138.29 tonnes or 140512 kg.

Tallest Building: Sears Tower, the national headquarters of Sears, Roebuck & Co. in Chicago, USA with 110 storeys, rising to 1,454 ft, or 443 meters. It surpassed World Trade Centre in New York City in height by 100 ft.

Tallest Tower: 'CN Tower' in Metro Centre, Toronto, Canada rises to 1822 ft. 1 in. or 555.33 meters. The tallest tower built before the era of television masts is the *Eiffel Tower* in Paris, France. Completed on March 31, 1889, it has a height of 320.75 meters or 1,056 ft. 31 in.

Largest Stadium: Strahov in Praha (Prague), Czechoslovakia. Completed in 1934, it can accommodate 2,40,000 spectatators.

Longest Bridge: The longest steel Arch Bridge in the world is New River Gorge Bridge in West Virginia, USA, completed in 1977 with a span of 1700 ft (518.2 meters).

Longest Railway Bridge: Huey P. Long Bridge, Louisiana, USA, which is 4.35 miles or 7 km long.

Highest Dam: The Grande in the Swiss Dixence Alps, built in 1961, has a height of 935 ft or 285 meters.

Longest Tunnel: For road traffic--the 10.14-mile (16.32 km) long two-lane St. Gotthard road tunnel from Goschenen to Airolo, Switzerland, opened in 1980.

Longest Tunnel: for rail traffic--the 22.2 km (13 miles 1397 Yd) long Oshimizu Tunnel on the Tokyo-Niigata Joestsu line in Central Honshu under the Tanigawa mountain, opend in 1979.

Longest Wall: The Great Wall of China, completed during 246-210 BC, has a mainline length of 2,150 miles or 3460 km.

Largest Passenger Ship: The world's largest and the longest liner is 'Norway' of 70,202.19 grt and 315.60m or 1035 ft 7½ in overall length. Owned by Knut Kloster of Norway.

Largest Cargo Vessel: Liberian ore/oil carrier 'World Gala' of 133,748 Gt or 282,462 dwt with a length of 1,109 ft or 338 m, owned by Liberian Trident Transports Inc., completed in 1973.

Largest Tanker: The world's largest tanker and ship of any kind is the 564,739-tonne deadweight "Seawise Giant", completed for C.Y. Tung in 1981.

Fastest Train: The highest speed recorded on any national rail system is 236 m/h or 380 km/h by the French SNCF high speed train TGV-Train-a Grande Vitesse, inaugurated in 1981.

Longest Rail Line: 9438 Km or 5,864½ miles on the Trans-Siberian line from Moscow to Nakhodka, USSR. There are 97 stops in the Journey which takes 8 days 4 hr.25 min.

Largest Airliner: The highest capacity airliner is the Boeing 747 'Jumbo Jet', first flown in 1969. It has a capacity of from 385 to more than 500 passengers, with a maximum speec of 602 m/h or 969 km/h.

Guinness makes Own Record

It all started when Sir Hugh Beaver went shooting in Ireland and missed a flock of golden pivers speeding by overhead. Were they the fastest game birds in Europe, the managing director of the Guinness brewery empire asked fellow members of his shooting party. Much scouring of encyclopaedias afterwards failed to produce a definitive answer. Sir Hugh, arguing that records invariably started pub and bar disputes the world over, decided it was time to produce the ultimate reference book for superlatives.

Now, 30 years later, in 1985 the Guinness book of records won an entry in itself as the world's biggest selling copyright book. Editor, Mr. Norris McWhirter, reeling off facts and figures with the polished ease of a master statistician, said: "We have sold 53 million copies in 26 languages. The latest are in Polish and Arabic."

Fastest Airliner: The Supersonic BAC Aerospatiale "Concorde", first flown in 1969 with a capacity of 128 passengers, cruises a up to Mach 2.2 (1450 m/h) or 2333 k/h.

Largest Airport: King Abdul-Aziz International Airport, near Jeddah, Saudi Arabia covering an area of 40 sq. miles or 103 sq.km Its Hajj Terminal is the world's largest roofec structure, covering 1.5 sq.km or 370 acres

Largest Sea Port: Port of New York and Nev Jersey. It has a navigatably wider front of 35 miles or 1215 km. A total of 261 cargo berth and 130 other piers give a total bert capacity of 391 ships at one time.

Busiest Port and Harbour: The World' busiest port and largest artificial harbour i Rotterdam - Europort in Netherlands, whicl handled 31,565 vessels in 1982.

Largest Airline: The USSR State Airlin "Aerofloat", established in 1923. This airlin operates 1300 aircraft over about 560,0 miles or 9,00,000 km and employs abou

,00,000. Carried 1.6 million passengers to 97 ountries in 1981.

astest Typewriting: The highest recorded peed attained on a manual machine: 1 ninute: 170 words--Margerette Owen, USA. nachine: Underwood, Standard, on October 1, 1918. 1 hour 147 words (net rate per min.): Albert Tangara, USA. Machine: Underwood Standard, on October 22,1923.

Largest Armed Force: Chinese People's Liberation Army with 4,230,000, according to 1982 census. Her para-military forces have been estimated at 12 million. In October 1985 China announced intention of reducing strength of PLA by one million.

Most Populous Country: China. The census of July 1982 shows a population of 1,008,175,288. The rate of increase in China is now estimated to be 38700 a day or 14.1 million per year.

Largest Election: that of January, 1980 for the 544 seats of Indian Lok Sabha. There were 362 million voters, from 23 seats and 8 Union Territories, who voted Smt. Indira Gandhi to Power.

The Richest in the World

Who is the wealthiest person in the world? According to the latest Guinness Book of World Records it is the Sultan of Brunei, Sultan Sir Muda Hassanal Bolkiah, who did a bit of refurbishing at his 422-million-dollar (about Rs. 527.50 crore) 1,788-room palace on the island of Borneo. He could afford to: He makes about $ 3.78 billion (Rs. 4725 crore) each year from oil revenues, and has foreign reserves amounting to $ 14 billion (Rs. 17,500 crore).

Ferdinand Marcos was billed by Guinness as the world's biggest alleged thief, accused by the Philippines Government of stealing up to $ 10 billion (Rs. 12,500 crore) during his tenure as President.

Actor Sylvester Stallone raised his prices twice and set a record each time. He got $ 12 million (Rs. 15 crore) plus a share of box-office receipts for Rocky IV and has received $ 20 million (Rs. 25.25 crore) to become the highest-paid actor.

Meryl Streep holds the record for the highest-paid actress, with $ 3 million (Rs. 3.75 crore) for **Out of Africa.**

Clavell, who wrote the best seller **Shogun**, *received a five-million-dollar (Rs. 6.25 crore) advance for a forthcoming work,* **Whirlwind.**

At the other end of the scale, the world's poorest nation is Chad, where per capita income fell to $ 80 (Rs. 1000) a year.

A duck in Aylesbury, England, got into the book by laying 457 eggs in 463 days, including an unbroken run of 375 eggs in 375 days before dying on February 7 — possibly from exhaustion. Maxwell J. Beck let 70,000 bees swarm over his body to win the bee-based competition.

* * * *

Who is the richest man in the United States?

The annual "Forbes" magazine list of the wealthiest people in the U.S. is topped by an Arkansas retailer who is proof that the rich often do get richer.

Mr. Sam Moore Walton, 68, founder of the Wal-Mart Stores, has more money than any other American, according to the annual "Forbes 400". Heading the list for the second straight year, Mr. Walton's $ 4.5 billion (about Rs. 5625 crore) fortune compares with the $ 2.8 billion (about Rs. 3500 crore) which the magazine said he had in 1985.

SOBRIQUETS

Sobriquets are secondary names (including nicknames) that become attached to certain persons, places or things. Thus the Bank of England is known as the Old Maid of Threadneedle Street, and the *Malayala Manorama*, the oldest newspaper of Kerala as the Granny of Kottayam.

'Bismarck was known as the Man of Blood and Iron' and Florence Nightingale is famous as 'the Lady with the Lamp'. Tippu Sultan of Mysore is still spoken of as the 'Mysore Tiger'.

Some names, as H. W. Fowler observes, have a large retinue of sobriquets. Rome, for example, may be 'the Eternal City, The City of Seven Hills, the Papal City, the Scarlet Woman, the Scarlet Whore, the Empress of the Ancient World and the Western Babylon'. (M.E.U.)

Sobriquets		**Primary Names**
Bengal's Sorrow	...	River Damodar, Bengal, India
Blue Mountains	...	Nilgiri Hills, India
Britain of the South	...	New Zealand
City of the Golden Gate	...	San Francisco, USA
City of the Golden Temple	...	Amritsar, India
City of Dreaming Spires	...	Oxford, England
City of Magnificent Distances	...	Washington, D.C., USA
City of Palaces	...	Calcutta, India
Cockpit of Europe	...	Belgium
Dark Continent	...	Africa
Emerald Island	...	Ireland
Empire City/City of Skyscrapers	...	New York, USA
Forbidden City	...	Lhasa, Tibet
Garden of England	...	Kent, England
Garden of India	...	Bangalore
Gate of Tears	...	Bab-el-mandab
Gateway of India	...	Bombay
Gift of the Nile	...	Egypt
Granite City	...	Aberdeen, Scotland
Great White Way	...	Broadway, New York
Herring Pond	...	Atlantic Ocean
Holy Land	...	Palestine
Island of Cloves	...	Madagascar (Malagasy)
Island of Pearls	...	Bahrain
Key of the Mediterranean	...	Gibraltar
Land of Cakes	...	Scotland
Land of the Kangaroo	...	Australia
Land of the Golden Pagoda	...	Burma
Land of Lillies/Land of Maple	...	Canada
Land of Morning Calm	...	Korea
Land of the Midnight Sun	...	Norway
Land of the Rising Sun	...	Japan
Land of Five Rivers	...	Punjab, India

Land of Thousand Lakes	...	Finland
Land of the White Elephant	...	Thailand
Never Never Land	...	Prairies of N. Australia
Pearl of the Antilles	...	Cuba
Playground of Europe	...	Switzerland
Powder Keg of Europe	...	Balkans
Quaker City	...	Philadelphia
Queen of the Adriatic	...	Venice, Italy
Queen of the Arabian Sea/Venice of the East	...	Cochin, India
Roof of the World	...	Pamirs
Rose Pink City	...	Jaipur, India
Saint of the Gutters	...	Mother Teresa
Sick Man of Europe	...	Turkey
Sorrow of China	...	River Hwang Ho.
Spice Garden of India	...	Kerala
White City	...	Belgrade, Yugoslavia
White Man's Grave	...	Guinea Coast
Windy City	...	Chicago, USA
World's Bread Basket	...	Prairies of N. America
World's Loneliest Island	...	Tristan da Cunha

ABBREVIATIONS

Abbreviations are an accepted form of usage in all developed languages. They save time and space—time in talking and space in writing. It is for this reason that abbreviations have become popular with all and sundry.

Formerly abbreviations were used sparingly. Only well known organisations, products, processes, or projects were indicated by their initials. Today, abbreviations are being bandied about indiscriminately. They are being used for all sorts of things, well known, little known and unknown.

AAPSO: Afro-Asian People's Soolidarity Organisation.
ABC: Atomic Biological and Chemical (warfare); Audit Bureau of Circulation.
ABM: Anti-Ballistic Missile
AC: Ante Christum (Before Christ); Alternate Current (electricity); Asoka Chakra
A/c: Account
ACC: Auxiliary Cadet Corps; Associated Cement Companies
AD: Anno Domini (in the year of our Lord)
ADC: Aide-de-camp (helper or assistant)
ADB: Asian Development Bank
AEC: Atomic Energy Commission
AG: Accountant General; Adjutant General
AH: Anno Hegirae (Mohammed's flight from Makkah to Medina, 622 AD)
AHQ: Air Headquarters or Army Headquarters
AICC: All India Congress Committee
AI: Air India
AIDS: Acquired Immune Deficiency Syndrome
AIMA: All India Manufacturers' (and also Management) Association
AIMO: All India Manufacturers' Organisation
AINEC: All India Newspaper Editors Conference
AIIMS: All India Institute of Medical Sciences
AIR: All India Radio
AM: Ante Meridiem (before noon)
AITUC: All India Trade Union Congress
ANZAC: Australia, New Zealand Army Corps
ANZUS: Australia, New Zealand, United States of America (a term applied to the Pacific Pact amongst these powers)
AOC: Air Officer Commanding
APC: Agricultural Prices Commission
ARC: Administrative Reforms Commission
ARDC: Agricultural Refinance & Development Corporation
ARP: Air Raid Precautions
ASAT: Anti-Satellite
ASC: Army Service Corps
ASI: Archaeological Survey of India
ASEAN: Association of South East Asian Nations
AVARD: Association of Voluntary Agencies for Rural Development
AVSM: Ati Vishisht Seva Medal
AWACS: Airbourne Warning And Control System

B.A.: Baccalaureus Artium: Bachelor of Arts; British Academy
BARC: Bhabha Atomic Research Centre

BBC: British Broadcasting Corporation
BC: Before Christ
BCG: Bacillus Calmette Guerin (Anti-T.B. Vaccine)
BE: Bachelor of Engineering
BEL: Bharat Electronics Limited
bhp: brake horse power
BENELUX: (A short term for) Belgium, Netherlands and Luxembourg
BHEL: Bharat Heavy Electricals Ltd.
BIS: Bank of International Settlements; British Information Service
BO: Body Odour
BP: Blood Pressure; Before Present
BPE: Bureau of Public Enterprises
B. Pharm: Bachelor of Pharmacy
BSF: Border Security Force
B Th U: British Thermal Unit

C°: Centigrade
CA: Chartered Accountant
CADA: Command Area Development Agency, India
Cantab: Cantabrigian (of Cambridge University)
CARE: Co-operative for American Relief Everywhere
CASA: Church's Auxiliary for Social Action, India
CASTASIA: Conference on the Application of Science and Technology to the Development of ASIA
CBI: Central Bureau of Investigation, India
c&b: caught and bowled (a term in cricket)
CCI: Cricket Club of India
CDP: Community Development Programme
CDS: Compulsory Deposit Scheme
cf: confer (compare)/refer
C.G.S. Chief of the General Staff Centimetre Gram
CGHS: Central Government Health Scheme
CIA: Crriminal Investigation Agency; Central Intelligence Agency (USA)
C-in-C: Commander-in-Chief
CID: Criminal Investigation Department
cif: cost, insurance and freight
CIL: Coal India Limited
CIR: Canada India Reactor
CITU: Centre of Indian Trade Unions.
CJ: Chief Justice
CLRC: Central Land Reforms Committee
CMO: Chief Medical Officer
CO: Commanding Officer
CIWTC: Central Inland Water Transport Commission
Co: Company
C/o: Care of
COFEPOSA: Conservation of Foreign Exchange and Prevention of Smuggling Act
cod: cash on delivery
cp: compare
CORE: Congress of Racial Equality
CPI/CPM: Communist Party of India/Marxist
CR: Central Railway
CRP: Central Reserve Police
CSIR: Council of Scientific and Industrial Research, India
CSO: Central Statistical Organisation, India/Congress of Industrial Organisation
Cwt: Hundredweight
CVC: Chief Vigilance Commissioner

DA: Dearness Allowance
DC: Deputy Commissioner/Direct Current (electricity) District of Colombia
D & C: Dilation and Curettage
DDT: Dichloro-diphenyl Trichloro-ethane
DGTD: Director General of Technical Development, India
DG: Dei Gratia (By the grace of god)
DIG: Deputy Inspector General
disco: discotheque (a place where one can dance to music played on records or discs)
DLO: Dead Letter Office (New name is RLO—Returned Letters Office)
D. Litt: Doctor of Literature
DM: District Magistrate
DMK: Dravida Munnetra Kazagham
DNA: Deoxy-ribose Nucleic Acid
DPI: Director of Public Instruction
DPSA: Deep Penetration Strike Aircraft
D. Sc: Doctor of Science
DV: Deo Volente (God Willing)
DVC: Damodar Valley Corporation
DUSU: Delhi University Students Union

ECA: Economic Co-operation Administration
ECAFE: Economic Commission for Asia and Far East (Now ESCAP)
ECE/A/LA: Economic Commission for Europe/Africa/Latin America
ECG: Electro Cardiogram
ECM: European Common Market
ECOSOC: Economic and Social Council (UN)
EEC: European Economic Community
EEG: Electro Encephalogram
eg: exempli gratia (for example)
E-in-C: Engineer-in-Chief
EMG: Electro Myogram
EMF: Electro-Motive Force
EMS: European Monetary System
E&OE: Errors and Omissions Excepted
EPLF: Eritrean People's Liberation Front
EPNS: Electroplated Nickel Silver
ERDA: Energy Research and Developmen Administration.
ERP: European Recovery Programme.
ESCAP: Economic and Social Commission for Asia and the Pacific.
ESI: Employees State Insurance.
ESP: Extra Sensory Perception.
etc: et ceteri or et cetera (and others/and so forth)
et seq: et sequens (and what follows).
Ex-officio: By virtue of one's office.
FACT: Fertilisers and Chemicals Travancore Ltd
FAO: Food and Agriculture Organisation.
FBI: Federal Bureau of Investigation.
FCI: Food Corporation of India, Fertilizer Corpora

tion of India.
FERA: Foreign Exchange Regulation Act (India)
FICCI: Federation of Indian Chambers of Commerce and Industry.
FLS: Fellow of Linnaean Society.
FM: Field Marshal.
fob: free on board.
for: free on rail.
FRG: Federal Republic of Germany.
FRCP: Fellow of the Royal College of Physicians.
FRCS: Fellow of the Royal College of Surgeons.
FRS: Fellow of the Royal Society.

GATT: General Agreement on Tariffs and Trade.
GBS: George Bernard Shaw.
GDR: German Democratic Republic (East Germany).
GHQ: General Head Quarters.
GI: Government Issue (a term which is normally applied to the American soldiers).
GMT: Greenwich Mean Time.
GNP: Gross National Product.
GOC: General Officer Commanding.
GPO: General Post Office.
GRT: Gross Rated Tonnage.

HAL: Hindustan Aeronautics Limited.
HE: His or Her Excellency.
HEC: Heavy Engineering Company.
HEL: Heavy Electricals Limited.
HMI: Himalayan Mountaineering Institute.
HMT: Hindustan Machine Tools.
Hon: Honourable, Honorary.
hp: horse power.
HP: Harmonic Progression; Himachal Pradesh.
HQ: Head Quarters.
Hr: Hour.
HSD: High Speed Diesel.
HSL: Hindustan Steel Limited.
HWM: High Water Mark.
HUDCO: Housing and Urban Development Corporation.

IAMC: Indian Army Medical Corps.
IAA: International Airports Authority.
IA: Indian Airlines.
IAF: Indian Air Force.
IAEA: International Atomic Energy Agency.
IARI: Indian Agricultural Research Institute, Delhi.
IAS: Indian Administrative Service.
IAAS: Indian Audit and Accounts Service.
IATA: International Air Transport Association.
IBM: International Business Machines.
Ibid: Ibidem. (the same).
IBRD: International Bank of Reconstruction and Development.
ICAO: International Civil Aviation Organisation.
ICAR: Indian Council of Agricultural Research.
ICBM: Inter-Continental Ballistic Missile (developed by USSR).
ICCR: Indian Council of Cultural Relations.
ICICI: Industrial Credit Investment Corporation of India Ltd.
ICJ: International Court of Justice.
ICMR: Indian Council of Medical Research.
ICS: Indian Civil Service.
ICWA: Indian Council of World Affairs.
IDA: International Development Agency; Institute of Cost and Works Accounts of India.
IDBI: Industrial Development Bank of India.
IDPL: Indian Drugs and Phharmaceuticals Limited.
ie: id est (that is).
IENS: Indian and Eastern Newspaper Society.
IFAD: International Fund for Agricultural Development.
IFC: Industrial Finance Corporation.
International Finance Corporation.
IFS: Indian Foreign Service.
IGY: International Geophysical Year.
IIPA: Indian Institute of Public Administration.
IISCO: Indian Iron and Steel Company.
IIT: Indian Institute of Technology.
ILO: International Labour Organisation.
IMCO: Inter-government Maritime Consultations Organisation.
IMF: International Monetary Fund.
IMS: Indian Medical Service.
IN: Indian Navy.
INA: Indian National Army.
in cog: in cognito. (unknown).
INS: Indian Naval Ship.
INSDC: Indian National Scientific Documentation Centre.
INTUC: Indian National Trade Union Congress.
INDIPEX: Indian International Philatelic Exhibition.
INSAT: Indian National Satellite.
INTELSAT: International Telecommunication Satellite.
INTERPOL: International Police.
infra dig: infra dignitatum (below status).
IOC: Indian Oil Corporation.
IOU: I Owe You.
IPC: Indian Penal Code.
IPCL: Indian Petro-Chemicals Corporation Ltd.
IPS: Indian Police Service, Inter Press Service.
IQ: Intelligence Quotient.
iq: idem quod (the same as).
IQSY: International Quiet Sun Year (1 Jan. 64—31 Dec. 65).
IRA: Irish Republican Army.
IRC: International Red Cross.
IRBM: Intermediate Range Ballistic Missile.
IRRI: International Rice Research Institute.
IRO: International Refugee Organisation.
IRS: Indian Revenue Service.
IRTS: Indian Railway Traffic Service.
ISRO: Indian Space Research Organisation.
ISI: Indian Standards Institution.
IST: Indian Standard Time.
ISSP: Indian Scientific Satellite Project.
ITBF: Indo-Tibetan Border Force.
ITI: Indian Telephone Industries; Industrial Training Institute.
ITO: International Trade Organisation; Income-Tax Officer.
ITU: International Telecommunication Union

ITUC: Indian Trade Union Congress.
ITY: International Tourist Year.
IUCD: Intra-Uterine Contraceptive Device.
IUCN: International Union for Conservation of Nature and Natural Resources.

JAL: Japan Air Lines.
JCO: Junior Commissioned Officer.
JP: Justice of the Peace.

KANU: Kenya African National Union.
KG: Knight of the Garter; Kindergarten.
KGB: Komitet Gosudarstvennony Bizo Pasnosti (Russian Secret Police).
KKK: Ku Klux Klan (U.S. Secret Society—Anti-negro, Anti-Jewish).
KMT: Kuomintang (Chinese National Party).

LASER: Light Amplification by Stimulated Emission of Radiation.
LD: Lok Dal.
Lib: Liberation.
Litt.D: Doctor of Literature.
LIC: Life Insurance Corporation (of India).
LL.B.: Bachelor of Laws.
LL.D:Doctor of Laws.
LL.M.: Master of Laws.
loc cit: loco citato (at the place quoted).
LPG: Liquefied Petroleum Gas.
Lt: Lieutenant.
Lt. Col.:Lieutenant Colonel.
LSD: Lysergic acid di-ethylamide.

M: Monsieur (Mister).
M.A: Magister Artium (Master of Arts).
MASER: Micro-wave Amplification by Stimulated Emission of Radiation.
MBA: Master of Business Administration.
MBBS: Bachelor of Medicine and Bachelor of Surgery.
MBE: Member of the British Empire.
MC: Military Cross; Member of Council; Municipal Committee; Municipal Commissioner; Medical Certificate.
MCC: Marylebone Cricket Club.
M.D: Doctor of Medicine.
Mlle: Mademoiselle (Miss).
Mlles: Mesdemoiselles (Plural of Miss).
Mme: Madam (Mrs.).
Mmes: Mesdames (Plural of Mrs.).
MI: Military Intelligence.
MISA: Maintenance of Internal Security Act.
MIRV: Multiple Independently Re-entry Targetable Vehicle.
Misc: Miscellaneous.
MIT: Massachusetts Institute of Technology, USA.
MKS: Metre Kilogram Second (System).
MLA: Member of Legislative Assembly.
MLC: Member of Legislative Council.
MLF: Multilateral Force.
MMTC: Minerals and Metals Trading Corporation.
MNC: Multi-National Corporation.
MP: Member of Parliament; Madhya Pradesh.
MPLA: People's Movement for Liberation of Angola.
mph: miles per hour.
MRA: Moral Re-Armament.
MRCP: Member of the Royal College of Physicians.
MRCS: Member of the Royal College of Surgeons.
MRTPC: Monopoly & Restrictive Trade Practices Commission.
M.Sc.: Master of Science.
MS/MSS: Manuscript/Manuscripts.
MVC: Maha Vir Chakra.

NABARD: National Bank for Agriculture and Rura Development.
NAEP: National Adult Education Programme.
NASA: National Aeronautics and Space Administration (U.S.A.).
NATO: North Atlantic Treaty Organisation.
NAYE: National Alliance of Young Entrepreneurs.
NB: Nota Bene (note well).
NCC: National Cadet Corps.
NCDC: National Coal Development Corporation.
NCAER: National Council for Applied Economics Research.
NCST: National Committee on Science & Technology.
NCERT: National Council of Educational Research and Training.
NCO: Non-Commissioned Officer.
NDA: National Defence Academy.
NDF: National Defence Fund.
NDC: National Development Council.
NDS: National Discipline Scheme.
NEFA: North-East Frontier Agency.
NFR: North-East Frontier Railway.
NER: North Eastern Railway.
NFIR: National Federation of Indian Railwaymen.
NIESBUD: National Institute of Entrepreneurship and Small Business Development (India).
NLTA: National Lawn Tennis Association.
NMDC: National Mineral Development Corporation.
non seq: non sequitur (it does not follow).
NOC: No Objection Certificate.
NP: Notary Public.
NPT: Nuclear Non-Proliferation Treaty.
NPC: National Productivity Council (India).
N and Q: Notes and Queries.
NSC: National Service Corps.
NSO: National Sports Organisation.
NSUI: National Students Union of India.
NTP: Normal Temperature and Pressure.
NR: Northern Railway.
NVF: National Volunteer Force.

O & M: Organisation and Methods.
OAS: Organisation for American States.
OAU: Organisation of African Unity. (It was set up in May, 1963).
OBE: Officer (of the Order of the) British Empire.
OC: Officer Commanding.
OCS: Overseas Communication Service.
OECD: Organisation for Economic Co-operation and Development.
OED: Oxford English Dictionary.

OEEC: Organisation for European Economic Co-operation.
OGL: Open General Licence.
OIL: Oil India Limited.
OK: All Correct (Slang).
OAPEC: Organisation of Arab Petroleum Exporting Countries.
OPEC: Organisation of Petroleum Exporting Countries.
OTS: Officer's Training School.
OXFAM: Oxford Committee for Famine Relief.
Oxon: Oxoniensis (of Oxford University).
OIGS: On India Government Service.
ONGC: Oil and Natural Gas Commission.
op cit: opero citato (in the work cited).

PA: Personal Assistant; Press Association.
PAC: Provincial Armed Constabulary.
PDA: Preventive Detention Act.
PAYE: Pay As You Earn.
pc: per centum; post card.
PEC: Project and Equipment Corporation.
PEN: (International Club of) Poets, Playwrights, Essayists, Editors and Novelists.
Perks: Perquisites of Office.
Per pro: Per procurationem (By the agency of)
Ph.D: Doctor of Philosophy.
PIB: Press Information Bureau.
PIN: Postal Index Number.
PKI: Partai Kommunis Indonesia (Communist Party of Indonesia).
PL480: Public Law 480 (Enactment in US under which foreign aid is given).
PM: Post Meridiem; Prime Minister.
PMG: Post Master General.
P&O: Peninsular and Oriental (Steamship) Co.
POW: Prisoner of War.
PRD: Prantiya Raksha Dal.
PRG: Provisional Revolutionary Government.
Pro-term: Pro tempore (for the time being).
PS: Post Scriptum (written after); Private Secretary, Personal Secretary.
PPS: Post Post Scriptum (additional post script).
PSP: Praja Socialist Party.
PT: Physical Training.
PTI: Press Trust of India.
PTO: Please Turn Over.
PVC: Poly Vinyl Chloride; Param Vir Chakra.
PVSM: Param Vishisht Seva Medal.
PWD: Public Works Department.

Q: Queue.
QED: Quod Erat Demonstrandum (that which was to be demonstrated).
QMG: Quarter Master General.
qv: quod vide (which see).

RADAR: Radio Detecting and Ranging.
R&D: Research and Development.
RAW: Research & Analysis Wing.
RBI: Reserve Bank of India.
RCC: Reinforced Cement Concrete.
rtd: refer to drawer.
RIP: Requiescat in pace (May he or she rest in peace).
RITES: Rail India Technical & Economic Services.
RLO: Returned Letters Office.
RMS: Railway Mail Service.
RN: Royal Navy.
RNA: Ribo Nucleic Acid.
RNAC: Royal Nepal Airlines Corporation.
RPM: Revolutions Per Minute.
RRC: Reactor Research Centre.
RSVP: Respondez Sil vous plait (Reply if you please).
RSS: Rashtriya Swayam Sewak Sangh.

SAIL: Steel Authority of India.
SALT: Strategic Arms Limitation Talks.
SAM: Surface to Air Missile.
SAS: Small Astronomy Satellite.
SC: Supreme Court; Security Council.
SCI: Shipping Corporation of India.
SCRA: Special Class Railway Apprentices.
SDO: Sub-Divisional Officer.
SDR: Special Drawing Rights.
SEATO: South-East Asia Treaty Organisation.
SITE: Satellite Instructional Television Experiment.
SHAPE: Supreme Headquarters of Allied Powers in Europe.
SLFP: Sri Lanka Freedom Party.
SLV: Satellite Launch Vehicle.
SP: Superintendent of Police.
SPCA: Society for the Prevention of Cruelty to Animals.
SPCK: Society for the Promotion of Christian Knowledge.
SR: Southern Railway.
SS: Steamship.
SSB: Service Selection Board.
SST: Supersonic Transport.
STARS: Satellite Tracking And Ranging Station.
STC: State Trading Corporation.
STD: Subscriber Trunk Dialling; Sexually Transmitted Diseases.
SUNFED: Special United Nations Fund for Economic Development.
SVP: Saturated Vapour Pressure.

TA: Territorial Army; Travelling Allowance.
TB: Tuberculosis.
TC: Trusteeship Council (U.N. Organ).
TDA: Trade Development Authority.
TELCO: Tata Engineering and Locomotive Company.
TISCO: Tata Iron and Steel Company.
TMO: Telegraphic Money Order.
TNT: Trinitrotoluene.
TERLS: Thumba Equatorial Rocket Launching Station.
TRACT: Transportable Remote Area Communications Terminal.
TTE: Travelling Ticket Examiner.
TVA: Tennessee Valley Authority.
TULF: Tamil United Liberation Front.
TWA: Trans-World Airlines.

UGC: University Grants Commission.
UK: United Kingdom.
UNAEC: United Nations Atomic Energy Commission.
UNCIP: United Nations Commission for India and Pakistan.
UNCSTD: United Nations Conference on Science & Technology for Development.
UNEP: United Nations Environment Programme.
UNCTAD: United Nations Conference on Trade and Development.
UNEF: United Nations Emergency Force (UAR).
UNESCO: United Nations Educational, Scientific and Cultural Organisation.
UNI: United News of India.
UNICEF: United Nations International Children's Emergency Fund, now known only as 'United Nations Childrens Fund'.
UNIDO: United Nations Industrial Development Organisation.
UNIPOM: United Nations India-Pakistan Observation Mission.
UNRRA: United Nations Relief and Rehabilitation Administration.
UP: Uttar Pradesh.
UPSC: Unnion Public Service Commission.
USA: United States of America.
USAID: United States Agency for International Development.
USI: United States of Indonesia.
USSR: Union of Soviet Socialist Republics.

VAT: Value Added Tax.
VC: Vice-Chancellor, Victoria Cross.
VD: Venereal Disease (see STD).
VCO: Viceroy's Commissioned Officer.
Vr.C: Vir Chakra.
VIP: Very Important Person.
VPP: Value Payable Post.
VVF: Village Volunteer Force (Organised in India since January 1963).

WAY: World Assembly of Youth.
WFTU: World Federation of Trade Unions.
WHO: World Health Organisation.
WMO: World Meteorological Organisation.
WWF: World Wildlife Fund, now renamed Worldwide Fund for Nature.

Xmas: Christmas.

YMCA: Young Men's Christian Association.
YWCA: Young Women's Christian Association.

ZETA: Zero Energy Thermo-nuclear Assembly or Apparatus.
ZIP: Zonal Improvement Plan.

NOBEL PRIZE AND HONOURS

The Nobel Peace Prize, the most prestigious of all international honours, was won by Jewish-American author and human rights campaigner, Elie Wisel in 1986. Wiesel, 58, is a survivor of the Nazi holocaust.

Mr. Wiesel, has been called the spirtual voice of the six million jews who died in World War II and he coined the term "holocaust" to describe the massacre. He lives in New York.

He was born in Eliezer Wiesel in Sighet, in what is now Roamania. In 1944, the Nazis ordered deportation of the city's 15,000 Jews, and the Wiesel family was shipped to Auschwitz concentration camp in Poland, where his mother and youngest sister were killed.

Mr. Weisel was sent in 1945 to Buchenwald concentration camp in Germany. After Buchenwald was liberated on April 11, 1945, Mr. Wiesel refused repatriation to Eastern Europe and settled in France.

He applied for U.S. citizenship in 1956, and published his first book, in Yiddish in Buenos Aires, that same year. It was entitled "And The World Has Remained Silent"

Literature: The Nigerian author, Wole Soyinka, became the first-ever African to receive the nobel prize the literature. He is not only well known here for his internationally acclaimed work, but also for his criticism of Nigerian society, especially its leaders, reports Inter Press Service (IPS).

In 1967, Soyinka was detained for almost two years during the Nigerian civil war (1967-69) for activities considered by the federal military government as being in favour of secessionists in Biafra.

The Nobel prize winner was a vociferous critic o the ousted military government of the retired Maj Gen. Muhammadu Buhari.

The 52-year-old writer was born in Abeokuta western Nigeria, and studied at the universities o Ibadan (Nigeria) and Leeds (England).

Author of at least 30 literary works covering drama, poetry and novels, Soyinka has been secretary-general of the union of writers of the African peoples, since 1976.

A fellow of Churchill College, University o Cambridge, England, he was awarded an honorary doctorate in literature by the University of Leeds England.

He is currently the president of the Internationa Theatre Institute in Paris, where he lives.

Economics: Mr. James McGill Buchanan of th United States won the Nobel Prize in Economics fo his development of bases for the theory of economical and political decision-making.

Mr. Buchanan, 67, is a Professor at George Mason University in Virginia.

The Royal Swedish Academy of Sciences cited his contributions in a field called new political economy, or "public choice", an area on the boundary of economic and political science studies.

"According to Mr. Buchanan, it is often futile to advise politicians or influences the outcome of specific issues. In a given system of rules, the outcome is to a large extent determined by established political constellations. A relevant example is that those who would like to correct individual traiffs should concentrate instead on the fundamental rules of international trade, such as GATT regulations".

Medicine: The Nobel prize for Medicine is shared by Mr. Stanley Cohen of the U.S. and Italo-American, Ms. Rita Levi-Montalcini, Sweden's Karolinska Institute announced.

They jointly won the prize for "their discoveries in growth factors, the citation said.

Mr. Cohen (63) works at the Department of Bio-chemistry at Vanderbilt University School of Medicine in Nashville, Tennessee, U.S. Ms. Levi-Montalcini, who has both the U.S. and Italian citizenship, works at the Institute of Cell Biology in Rome.

The institute said their discovery of nerve growth factor and epidermal growth factor had opened new fields of widespread importance to basic science. The discoveries would, as a direct consequence, increase understanding of many diseases, including tumour diseases such as cancer, and degenerative ailments of old age such as senile dementia.

The growth factor discoveries would soon result in the development of therapeutic agents and improved treatment in these diseases.

Physics: Two Germans and a Swiss, all pioneers in microscopy, were awarded the 1986 Nobel prize for physics today.

Mr. Ernst Ruska of the Fritz Haber institute and Max Planck society in Berlin was cited for his work on constructing the first electron microscope.

The Frankfurt-born Mr. Gerd Binning and Mr. Heinrich Rohrer of Switzerland were cited for their work on constructing the scanning tunneling microscope.

The two won the award for their work on electronic microscope research and development, the Swedish Royal Scientific Academy said in its citation.

Electronic microscopy had become a crucial part of biological and medical research since Mr Ruska's development of the instrument during the 1920s in Berlin.

Chemistry: The 1986 Nobel prize for Chemistry was awarded to the American professor Mr. Dudley R. Herschbach, German-born Canadian Mr John Charles Polanyi and Mr. Yuan Tesh Lee of

Price of the Prize
Rs. 3.6 million

The value of last year's Nobel prizes was Kr. 2 million ($ 2,90,000, about Rs. 36,25,000) each, an increase of 11 per cent from the Kr. 1.8 million awarded in 1985. The prizes were distributed at ceremonies in Stockholm and Oslo on December 10, the anniversary of Alfred Nobel's death.

The Nobel Foundation's income in 1985 amounted to Kr. 36 million, including Kr. 21.5 million in interest, Kr. 6 million on share dividends and nearly Kr. 8 million from real estate assets. This represent an increase of Kr. 10 million from 1983.

With expenditures totalling Kr. 5.6 million, the Foundation can boast of a profit of Kr. 30.5 million for the year, which compares with Kr. 28.5 million in 1984. The total market value of the Foundation's assets was up from Kr. 638 million in 1984 to Kr. 711 million in 1985.

A sum nearly equalling the Kr. 10 million awarded in prizes last year — in the fields of physics, chemistry, physiology or medicine, literature and peace — allocated to support the work of the various prize-awarding committees.

Taiwan, the Swedish Royal Academy of Sciences announced.

They are honoured for their contribution to the dynamics of chemical elementary processes. "Their research is of great importance in developing a new field of research in Chemistry," the academy said.

Mr. Lee was born in Taiwan in 1936. He and Mr. Polanyi, 57, join the ranks of many laureates who emigrated to north America from Europe.

Magsaysay Awards

An American priest, a South Korean student activist, two Asian couples, an international institute and a radio station received Asia's version of the Nobel Prize, the Ramon Magsaysay Award in 1986.

The awards ceremony in Manila coincided with the 79th anniversary of the birth of Magsaysay, a former Philippine president who instituted a land reform programme to defuse a communist insurgency in the 1950s. He was killed in a plane crash in 1957.

Each of the eight winners received a gold medallion and $ 20,000 (about Rs. 2,40,000).

Three of the five categories had joint awards – Mr. Aloysius Benedictus Mboi of Indonesia and his wife, Mrs. Nafsia Mboi for government service –

Mr. Abdul Sattar Edhi of Pakistan and his wife Mrs. Bilquis Bano for public service – and Rev. John Vincent Daly of Philo, Illinois, and Jeong Ku-Jei of South Korea – for community leadership.

The Roman Catholic Church-run Radio Veritas in Manila won the award for journalism, and the International Institute of Rural Reconstruction, based in Cavite province Near Manila, won the prize for international understanding.

Among those who won the award previously are the following ***Indians:***

International Understanding: Mother Teresa (1962);

Journalism, Literature and Creative Communication Arts: Amitabha Chowdhury (1961), Satyajit Ray (1967), B.G. Verghese (1975), Gour Kishore Ghosh (1981), Arun Shourie (1982), R.K. Laxman (1984);

Community Leadership: Acharya Vinoba Bhave (1958), Dara N Khurody; Tribhuvandas K Patel and Verghese Kurian (1963), Kamaladevi Chathopadhyay (1966), M.S. Swaminathan (1971), Ela R Bhatt (1977), Rajankant S Arole and Mabelle R Arole (1979);

Public Service: Jayaprakash Narayan (1965), M.S. Subbalakshmi (1974); Manibhai Phimbai Desai (1982); Muralidhar Devidas Amte (1985).

Government Service: C.D. Deshmukh (1959).

Literature

Jnanpeeth Award: Gujrati writer Pannalal Patel won India's highest literary prize, the Rs. 1.5-lakh Jnanpeeth Award for 1985.

Patel, who has studied up to the Fifth standard, is the second Gujarati writer to receive it after Uma Shankar Joshi, who shared the third Jnanpeeth award with K. V. Puttappa (1967).

Patel, 74, wins the honour for his epic novel "Manvini Bhavai", which portrays the Indian rural sage revealing the Indomitable spirit of man facing challenges confronting him. His novel has been placed in the same class as the great Gujarati classic 'Saraswatichandra' by Goverdhanram.

The advent of Patel on the Gujarati literary scene more than 40 years ago was hailed as a miracle for he had hardly any educational background. Yet his mastery over the language was superb, the selection board said.

Patel conceived "Manvini Bhavai" as the first part of a trilogy: the two subsequent volumes were "Bhangyana Bheru" (1957) and "Ghammer Valonu" (1968). The trilogy captures a profile of man and the passing away of a civilisation depicting it with a throbing vitality, which may be occasionally crude and repulsive in its expression. But it is always powrful in the elemental strength of its passions.

Considered a great stylist, the Gujarati writer's strength lies in his use of dialect expression the poetry of rural life in all its aspects. Author of 30 novels, 27 collections of short stories, five plays and some books for children, Patel has, in recent years, written novels based on the Mahabharata, the Ramayana and the Bhagwat Gita.

Following is the list of previous recipients:

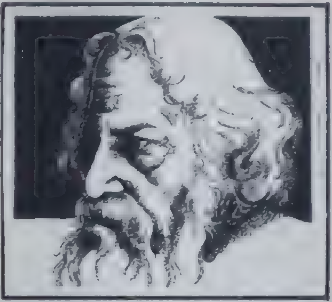
1965 Mahakavi Sankara Kurup: ***Odakuzhal;*** 1966 Tara Shankar Banerji: ***Ganadevata;*** 1967 Dr. K. V. Puttappa: ***Ramayana Darsanam;*** Uma Shankar Joshi: ***Nishit;*** 1968 Sumithranandan Pant: ***Chidambaram;*** 1969 Firak Ghorakhpuri. ***Gul-a-Ngma;*** 1970 Dr. V. Satyanarayana: ***Ramayana Kalapavrikshana;*** 1971 Bishnu Dey. ***Smithi Sattha Bhavisvath;*** 1972 Ramdhari Singh Dinakar. ***Urvasi;*** 1973 D. R. Bhendhre: ***Nakuthanthi;*** Gopinath Mohanti: ***Madimadal;*** 1974 V. S. Khandhekhar: ***Yayathi;*** 1975 P. V. Akilandam:/***Chitirappavai;*** 1976 Ashapurna Devi ***Pradhama Prathi Shruti;*** 1977 Dr. K. Shivaram Karanth: ***Mukajia Kanakasugala;*** 1978 S. H. Valsyayan: ***Kitni Navom Me Kithnibar;*** 1979 B. K Battacharya. ***Mrutunjaya;*** 1980 S. K. Pottekkat: ***Or*** ***Desathinte Katha;*** 1981 Amrita Pritam ***Kagaz ke Kanwas;*** 1982 Mahadevi Verma: ***Yama;*** 1983 Dr Masthi Venkatewara Iyenkar: ***Chikkaveera Rajendra.*** 1884. Thakazhi Sivasankara Pillai. ***Kavar*** and other novels.

Asan World Prize: Indo-Anglian poetess Mrs Kamala Das, also known by her pen-name Madhavikutty, won the 1985 Asan World Prize for the literary work. Mrs. Kamala Das is the fifth recipien of the Asan World Prize since it was instituted i 1981 in memory of the Kerala poet Kumaran Asan The previous recipients are: Leopold Sedar Senghor (Senegal), Nicholas Guillen (Cuba), Ethiravire Saradchandra (Sri Lanka) and Judith Wright (Australia).

Asan Prize: For a 'national poet' in memory o Malayalam poet Kumaran Asan. N. N. Kakkad fo

Indians Who Won the Prize

"Where the mind is without fear
and the head is held high;
Where the world has not been broken up
into fragments by narrow domestic walls....
....Into that heaven of freedom, my Father,
let my country awake."
—Gitanjali



So sang poet Rabindranath Tagore whose 125th birth anniversary was celebrated in India and abroad last year.

It was Tagore who first won the Nobel Prize for India through his inimitable strains of poetic genius.

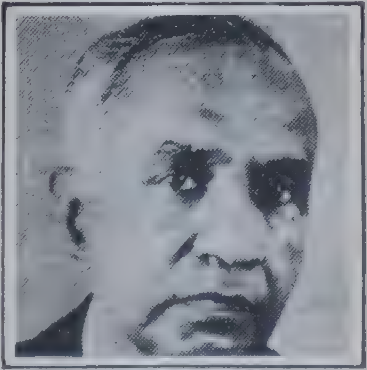
Here is a thumb-nail sketch of all the Indians who won the Nobel Prize.

Rabindranath Tagore (1861-1941): Author and educator. Founded Shantiniketan (1901) which later became Vishuabharati University. Tagore wrote love lyrics. 'Gitanjali' and philosophical 'Sadhana' are important works. India;s national anthem was written by Tagore. Awarded Nobel Prize for literature in 1913.

C. V. Raman (1888-1970): Physicist. Raman was born at Thiruvanaikkaval near Tiruchirappilly in Tamil Nadu. Educated in Presidency College, Madras. Married to Lokasundari. Awarded Nobel Prize for Physics in 1930 for study of scattering of light. Popularly known as 'Raman Effect', the theory describes change in frequency of light passing through transparent medium.

Hargobind Khorona (b. 1922): Now an American citizen, was born in Raipur, Madhya Pradesh. He is married to a Swiss. Khorona was awarded Nobel Prize in 1968 for medicine for laboratory synthesis of a yeast gene for the first time.

Mother Teresa (b. 1910): Was born to Albanian parents in Skoplje, Yugoslavia and baptized Agnes Gonxha Bojaxhin. She came to India when she was 18 and took up teaching. She established a new congregation 'Missionaries of Charity', which was approved by Vatican in 1950. Mother Teresa became an Indian citizen in 1948. She was awarded Nobel prize for Peace in 1979.



Subramanian Chandrasekhar (b. 1910): Now an American citizen, was born at Lahore, now in Pakistan, where his father was working. He was educated in Presidency College, Madras. Nobel laurăte C. V. Raman was his uncle. All of Chandrasekhar's three brothers are scientists Married to Lalitha, who was one year his junior in college. She is also a Physicist. He was awarded Nobel prize for Physics in 1983 for what is now known as 'Chandrasekhar's Limit', which determines the minimum mass of a dying star enabling it to survive his anthology 'Saphalamee Yathra'.

Jnanpeeth Award for the Younger Generation: Vinod Das for his collection of poems, 'Khilaf Hawar Se & Gezartey Huey'.

Booker Prize: Top British litrary award £ 15,000: Kingsley Amies for his novel 'The Old Devils' with 'brilliant comic insight'.

Rajarajan Award: By Tamil University Tanjavur. Rs. 1,00,001 – Jayakanthan for his novel 'Sundarakandam'.

Vayalar Award: By Vayalar Memorial Trust. Rs. 25,000: N. N. Narayanan Namboothiri, Kakkad, Poet, Kerala, for his anthology 'Saphalamee Yathra' (Fruitful is this Journey)

Children's Book Trust Award: Inaugural Children's Book Trust - UNICEF award. Children's Fiction: Kaveri Bhat for novel 'Once upon a Forest'. Picture Book: Mitra Phukan for 'Maman's Revenge'.

Nehru Literacy Award: By the Indian Adult Education Association: Dr. Madhuri Shah, Former UGC Chairman.

Rajaji Literary Award: By Bharatiya Vidya Bhavan. 1. Dr. V. K. Gokak for his epic poem, 'Bharata Sindhu Rashmi', 2. Prof. Sukumar Azhikodu for his prose work, 'Thathvamasi'

Science

Third World Academy Award: By the Third World Academy of Sciences, Trieste, Italy. $ 10000 (about 1,25,000) Physics: E.C.G. Sudarshan, Director, Institute of Mathematical Sciences, Madras; Chemistry: Prof. Leopoldo De Meis, Brazil and Mathematics: Prof. Liao Shan Tao China, Prof. Sudarshan won the award for "his fundamental contribution to the understanding of the weak nuclear force, in particular, for his part in the formulation of the Universal V-A theory of Sudarshan and Marshak".

Albert Einstein World Award of Science: Dr. M. S. Swaminathan, Director General, International Rice Research Institute, Manila, for his 'contribution in the field of Plant Genetics'.

Edward Warner Award: By International Civil Aviation Organisation: JRD Tata for his contribution to aviation including his solo flight from Bombay to Karachi in 1932.

Pritzker Price: Regarded as the Nobel Prize for architecture. Instituted by Jay Pritzker of Chicago, President of Hyatt Foundation $ 1,00,000. (about Rs. 12,50,000): Gottfried Boehm, Cologne.

The Fields Medal: Regarded as Nobel Prize for mathematics. Instituted 50 years ago by Canadian mathematician, John Charles Fields and given every year by International Mathematical Union, to mathematicians under 40,: Gerd Faltings, a German teching at Princeton University, Michael Freedman, University of California, San Diego and Simon Donaldson, Oxford University for breakthroughs in number theory and topology.

Hancock Medal: By the British Plastic and Rubber Institute. K. M. Philip, former President, All India Rubber Industries Association, for his contribution for the global growth of rubber industry.

Bessemer Gold Medal: Britain's Institute of Metals: JRD Tata.

R.D. Birla Memorial Award: By the Indian Physics Association. Rs. 50,000: Dr. Raja Ramanna for his contribution of the field of nuclear fission studies, etc.

Prix de These 1985: By CNRS - The French National Centre for Science & Research - Brahmanand Mohanty, IIT, Madras and Ravindra Satish Topgi, National Institute of Occeanography, Goa.

Bhatnagar Medal: The Shanti Swarup Bhatnagar Medal by the Indian National Science Academy: Prof. R. Narasimha, Director of the National Aeronautical Laboratory, Bangalore, for his work in fluid mechanics.

Kalinga Prize: The Kalinga prize for the Popularization of Science was won by British Professor Sir Peter Medawar, 70, in 1985. The award, one among the Science prizes distributed by UNESCO, carries an amount of £1500.

The Kalinga Prize was instituted by Bijou Patnaik, industrialist and politician, who is the founder and Chairman of the Kalinga Foundation Trust in the state of Orissa. UNESCO awarded the prize for the first time in 1952.

The winner of the prize also receives the UNESCO Gold Medal and is invited to visit India as a guest of Kalinga Foundation Trust.

Medicine

Birla Award: By Rameshwardas Birla Smarak Kosh. Rs 1,00,000: Dr. B. K. Bachhawat, head of the department of Bio-chemistry, Delhi University for research in the field of medicine.

Dhanwantari Award: By Dhanwantari Foundation for the 'most outstanding medical man of the year' : Dr. Dara K. Karanjvala, Ex-Principal of the Urological Society of India.

Dr. B. C. Roy National Award: Rs 50,000 Prof V. Ramalingasamy, Director General of Indian Council of Medical Resarch, Dr. R. K. Madan, Bombay and Dr. M. M. S. Siddhu, Lucknow.

Peace

Indira Gandhi Award for National Integration: By Congress (I) : Swami Ranganathananda o Ramakrishna Mission.

Waterler Peace Prize: By the Carnegie Foundation, Netherlands: Dr. V. Kurian, for his revolutionary work for the Indian diary farmers. Rs. 2,00,000

Indira Gandhi Gold Plaque Award: By Asiati Society, Calcutta: Olaf Palme, Sweedan (Posthumously).

Freedom from Fear Award: By the Frankli Delano Roosevelt Four Freedoms Foundation, U.S.

af Palme, Sweden (Posthumously).

ngowal Award: By Sant Harchand Singh Lon- wal Memorial Foundation: Acharya Sri Sushil uniji Maharaj, founder, International Mahavir Jain ssion and the World Fellowship of Religions.

ag Hammarskjold Award: Mother Teresa and :. Meher Masker, both from India.

okmanya Tilak Award: By Lokmanya Tilak emorial Trust. Rs. 25,000. S.A. Dange, Communist eader, Public Service.

ehru Award: Instituted by Government of India, e Jawaharlal Nehru Award for International nderstanding carries a cash Prize of Rs. 15 lakh, a tation and a scroll of honour: Olaf Palme, former wedish Prime Minister (posthumous).

ormer Winners:

978	Most Ven Nichidatsu Fuji
979	Nelson R. Mendela
980	Barbara Ward
981	Gunnar Myrdal and Mrs. Alva Myrdal
982	Dr Leopold Sedar Senghor
983	Dr. Bruno Kreisky
984	Mrs. Indira Gandhi (Posthumous)

U Thant Award: The award originally established y U Thant and named after him since his death, is nade to an outstanding Personality who through his r her efforts has contributed to the enhancement of ultural understanding and development between ations

Mrs. Indira Gandhi received the Award in 1982.

Past recipients of the award included Dr. S. adhakrishnan Prof. Arnold Toynbee, Mrs. Barara Ward. U Nu. Mr. Lester Pearson, Mr. Adlai tevenson and Mrs. Nancy Wildon Ross.

hird World Prize: The Third World Foundation rize of $100,000 for 1985 was given to South-African lack Nationalist leader, Nelson Mandela and his vife Mrs. Winnie Mandela.

Beyond War' Prize: Six heads of state, including rime Minister Rajiv Gandhi have been honoured y California-based 'Beyond War' pacifist organisaon in 1985.

The six leaders--from Mexico, Argentina, India, weden, Greece and Tanzania won the "Beyond Var" prizes for their participation in a five-continent eace initiative introduced in India in January 1985.

The six heads of state, who signed the New Delhi eclaration for disarmament and peace are Mexcan President, Mr. Miguel de La Madrid, Argenine President Mr. Raul Alfonsin, Prime Minister Mr. ajiv Gandhi, former Swedish Prime Minister Mr. Olaf Palme, the Greek Prime Minister Mr. Andreas apandreou and the former Tanzanian President r. Julius Nyerere.

Environment

Bajaj Award: By Jamnalal Bajaj Foundation. 1. Sunderlal Bahuguna, 'Chipko' leader, for constructive work. 2. Vilas Balwant Saluke, Engineer, Pune, for the 'application of science and technology for rural developement'; 3. Mrs. Jankidevi Bajaj Award Mrs. Vasantibehen Subodh Kumar Roy, Singhbhum, Bihar for contribution to welfare and uplift of women

New Global Awards

A few notable interanational awards have been instituted last year to promote science and human endeavour.

UNESCO established the 'Javed Husain Prize for Young Scientists' to be given to a scientist below the age of 35 years and irrespective of any consideration, especially of nationality, race, sex, language, profession, ideology or religion. The first of this biennial Prize will be awarded in 1987.

The award is named after its donor, the Indian Physicist Dr. Javed Husain who has held professorships in the US and Saudi Arabia and is at present on the faculty of Aligarh Muslim University.

A Bombay-based business family is setting up another international award and hopes that it will be comparable to the Nobel prize.

A $ 25-million endowment by the Hinduja brothers is expected to provide five prizes yearly or about $ 250,000 each to people in health and education working to alleviate flood, famine and poverty. "The New York Times" said.

The Hinduja brothers also recently contributed $ 1 million to establish an endocrine research unit at Massachusettes general hospital, the paper reported.

K. P. Goenka Award: For environment: Rs 1,00,000. Rural Agricultural Institute, Narazangaon. Additional award of Rs. 50,000: Safai Vidyalaya, Ahmedabad.

Right Livelihood Award: Dr. Rosalie Bertell of Canada, Fellow of the Indian Society of Naturalists (INSONA) and Ladakh Ecological Development Group.

Sanjay Gandhi Award: By Sanjay Gandhi Memorial Trust. Given in 3 disciplines. 1 lakh each. Environment and Ecology: Dr. T. N. Koshoo, Botanist Energy: C.V. Sundaram, Director, Reactor Research Centre, Kalpakkam, Family Welfare and Population Control: Dr. N.R. Moudgal and Dr. B.N Saxena.

J. Paul Ghetty Award: $ 50,000 (abovt Rs. 6,25,000): Sir Peter Scott, Founder-Chairman of World Wildlife Fund.

Arts

Spirit of Freedom Award: M. S. Subbalakshmi, the living legend of Carnatic music. Second award. First won by Zubin Mehta, noted music conductor.

Lata Mangeshkar Award: By the Madhya Pradesh Government Rs. 1,00,000: Jaidev, Hindi music director.

Tulsi Award: By the Madhya Pradesh Government Rs. 1,00,000: Mani Madhawa Chakyar, Kerala for his contribution to the dance form of 'Koodiyattam'.

Kalidas Award: By the Madhya Pradesh Government Rs. 10,000. Narayan Sreedhar Bendhre, noted Artist.

Oscar Award: At the 58th annual awards offered by American Academy of Motion Picture Arts and Sciences the following were the winners:

Best Picture: Out of Africa, Directed by Sydney Pollack who won the Oscar for the Best Director too. The picture got 5 more Oscars.

Best Actor: William Hurt (Kiss of the Spider Woman), *Best Actress:* Geraldine Page (The Trip to Bountiful) **Best Foreign Film:** The Official Story (Argentina).

Requiem for A Winner

Dr. Albert Szent-Gyorgyi, winner of the 1937 Nobel prize for medicine for the discovery of vitamin C, died on October 25 last at the age of 93.

The Hungarian-born scientist died at Woods Hole, Massachusetts, where he lived and, until last year, worked for the National Foundation for Cancer Research.

Holding medical degrees from the Universities of Budapest and Cambridge, Dr. Szent-Gyorgyi isolated in 1928 the anti-scorbutic principle from critic fruit, leading to the synthesis of vitamin C for treatment of scurvy and other diseases.

After world war II he was offered the presidency of the New Hungarian Republic but refused and in 1947 emigrated to the United States, where he obtained U.S. citizenship in 1955.

He published prolifically on work ranging from cancer and muscular contraction to electronic and submolecular biology

Miss World: Gisella Jeanno-Marie Laronde, 2 Miss Trinidad and Tobago. Prize money $ 30,00

Miss Universe 1986: Barbara Palacios, 22, Ven- zuela.

Miss International 1986: Helen Fairbrohe 20, Britain.

Miss India 1986: Poonam Gidwani, 21, mode Bombay.

Media

Pulitzer Prize: 10th year. International Reportr award: Lewis Simons, Pete Carey and Katherr Ellison of 'Mercury News', in San Jose, California f a 1985 series exposing Marcos of Philipines

Golden-Pen of Freedom: By the Americ Newspaper Publishers' Association: Anthor Heard, Editor of the 'Cape Times', South Afric

Indira Gandhi Media Award: By the Council Asian Indian Associations, Washington: Sundra Sankaran, Deputy. Chief of Information a Public Affairs, The World Bank.

Ashok Jain Award: For national awarene advertising Rs. 20,000. Best campaign in Englis Miss Harpreet Sawhney, Bombay for her entry drug addiction. In Hindi, Prafull Satam of Bomb for his entry on blood donation.

ISA—Khatau Gold Medal: By Indian Society Advertisers: Advertising Club, Bombay.

Inlaks Journalism Award: By the Inlaks Found tion, London. For Indian journalists under 3 Rs. 1,00,000 in convertible currency: Sekhar Gup 'India Today', for his 'considerable investigati skill as well as his versatility'.

National Honours

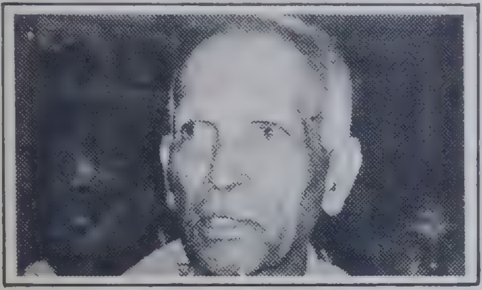
Bharat Ratna: None in 1986. The following are t former recipients: C. Rajagopalachari (1954), Radhakrishnan (1954), C. V. Raman (1954), Jawaha lal Nehru (1955), Bhagwan Das (1955), M. Viswe waraiya (1955), Govind Ballabh Pant (1958), D. Karve (1958), B. C. Roy (1961), P. D. Tandon (196 Rajendra Prasad (1962), Zakir Hussain (1963), P. Kane (1963), Lal Bahadur Shastri (posthumo (1966), Mrs. Indira Gandhi (1971), V. V. Giri (197 K. Kamaraj (posthumous) (1976), Mother Tere (1980), Vinoba Bhave (1983)

Padma Vibhushan: Dr. Avtar Singh Pain Director Vallabhai Patel Chest Institute, Delhi, Bi Maharaj, Kathak dancer, New Delhi, Muralid Devidas (Baba) Amte, Social Worker, Maharasht

Prime Minister's Shram Awards: By Labo Ministry Shram Bhushan (Rs. 50,000): Birend Kumar Guha, Rourkela and Jagdeesha, Bangalo

National Award for the Welfare of the Han icapped: By the Ministry of Welfare. Individu Baba Amte. Institution: Isaket Institute of Ort

Wanted: Socially Oriented Mind



Swami Ranganathananda

All aspects of management and administration in India, including our relevant training institutions, will do well to sit back calmly and ponder over what the philosophy and technique of Japanese management mean to us.

As eastern countries, both have a common spiritual background. We should remember that Zen meditation, which gave Japan trained and disciplined minds, is an Indian contribution which India herself, in recent centuries, failed to utilise and profit from; we depended solely on an amalgam or rituals and ceremonies, magic and miracles, and superstition in religion, and the stuffing of minds, in education, neglecting the vital discipline of training of the mind in both.

A little thinking will reveal to us the close kinship of the Japanese philosophy and technique to our own philosophy and value system. This revelation will impart a dynamism and direction to our administration and management, now sadly lacking, when a good percentage of our people grasp it and become inspired by it. They will then realise the implications of certain truths that stare at us.

Thinking over these facts, it will become obvious to us that some vital element is lacking in us. That vital element is trained and disciplined and socially oriented minds and hearts. If and when that long missing element is supplied, our nation can not only reach the level of the Japanese economic and social performance, but even out-reach it. It is on this vital missing link that we have to concentrate our national attention, and identify and introduce it into our education, religion and inter-human situations.

Unfree India had more free people than free India has. This tragedy is the result of not using the freedom. which came to us after centuries of political slavery and social humiliation, to energetically work to transform Indian society from an undeveloped to a highly developed one. Our people used their undoubtedly high intelligence only to advance oneself, in total neglect of the nation: they forgot that such lives are empty, in spite of high or low levels of money or power, that such people, in the words of Vivekananda, are more dead than alive.

Unfree people, like immature children, are difficult to manage: but free and responsible people are easy to manage. All management involves commanding and obeying. But, in a democracy, all commanding should avoid injuring the selfrespect of the one commanded, and all obeying should be on the basis of one's freedom and self-respect, and never degrade into cringing. It is only in this context that inter-human relations in the management situation can evoke the best from the other person.

A recent Japanese visitor to our country was struck by the widespread wearing of wristwatches by our people including our clerks, rickshaw-pullers and other low-paid citizens. He remarked to his Indian friend: "in spite of Japan being more economically advanced than India, we Japanese do not consume most of what our industry produces like wristwatches and clocks, but largely export them for strengthening our economy. And what strikes me further in India is that every one here wears a watch, but nobody is punctual, and the watch seems to be more a status symbol than useful instrument of punctuality!"

- *Excerpts from a speech made by Swami Ranganathananda, the winner of 1986 Indira Gandhi Award For National Integration.*

paedics and Rehabilitation, Ambala, 2. Viklang Kendra, Allahabad.

Bravery Award: By the Indian Council of Child Welfare. Sanjay Chopra Award: Haribal Yadav, West Champaran, Bihar. Geeta Chopra Award: Krishna Burmen, Cooch Behar, West Beengal (posthumously).

Sahitya Akademi Award: The Sahitya Akademi selected 22 books for its 1985 award. The awards include a casket containing an inscribed copper plaque and a cheque for Rs. 10,0000.
The following are the winners:

Assamese: (Late) Krishnakanta Handigue: Krishna Kanta Sandikoi Rachana–Sambhar (Literary Criticism); ***Bengali:*** Sunil Gangopadhyay: Sei Samay (Part II Novel); ***Dogri:*** Dinoo Bhai Pant: Ayodhya (Drama); ***English:*** Kamala Das : Collected Poems (Poetry); ***Gujarati:*** Kundanika Kapadia: Sat Paglan Aakashmen (Novel).

Hindi: Nirmal Varma: Kavve Aur Kala Pani (Short Stories); ***Kannada:*** (Late) T. R. Subha Rao: Durgasthamana (Novel); ***Kashmiri:*** Mirza Arif: Loli Vetsar (Poetry); ***Konkani:*** J. B. Moraes: Bhitorem Tufan (Poetry); ***Maithili:*** (Late) Hari Mohan Jha: Jeevan Yatra (Autobiography).

Malayalam: Sukumar Azhicode: Tatvamasi (Critical Study); ***Manipuri:*** H. Guno Singh: Vir Tikendrajit Road (Novel); ***Marathi:*** Vishram Bedekar: Ek Zad Ani Don Pakshi (Autobiography); ***Nepali:*** Machendra Pradhan: Nil Kanth (Novel); ***Oriya:*** Rajendra K. Panda: Saila Kalpa (Poetry); ***Punjabi:*** Ajit Cour: Khana Badosh (Autobiography).

Rajasthani: Sanwar Daiya: Ek Duniya Mhari (Short Stories); ***Sanskrit:*** Vasant T. Sevade: Vindhyavasini Vijaya Mahakavyam (Epic); ***Sindhi:*** Arjun Hasid: Mero Sij (Poetry); ***Tamil:*** A. S. Gnanasambanden: Kamban: Putiya Parvai (Literary Criticism); ***Telugu:*** (Late) P. Padmaraju: Gaalivana (Short Stories); ***Urdu:*** Balraj Komal: Parindon Bhara Asmann (Poetry).

Sangeet Natak Akademi Awards, 1986: A Tamara Patra, a citation and Rs. 10,000.

Fellows: Film-maker Satyajit Ray, music director Ani Biswas and singer Hemant Kumar Mukhopadhyay Komal Kothari, S. Ramanathan and V. V. Swarna Venkatesa Deekshithar.

Carnatic classical music: B. Rajam Iyer (vocal), Nedunuri Krishnamoorthy (vocal), Rajeswari Padmanabhan (veena) and M. Chandrasekharan (violin),

Dance: Krishnaveni Lakshmanan (Bharatnatyam) and Priyambada Mohanty (Odissi)

Theatre: K. T. Muhammed, Satya Prasad Barue (playwriting — Assamese), Alyque Padamsee (direction), Prabhakar Panshikar (acting — Marathi), Pisapati Narasimha Murthy (acting —

Hearty laugh: Mother Teresa who received the 'Medal of Freedom' the highest civilian decoration in the U.S. in 1985 shares a few happy moments with President Reagan in the White House.

Telugu) and Khaled Choudhury (scenic design).

Traditional folk and tribal art: K. P. Krishnankutty Poduwal, Jaffer Hussain (Quwwali), Ram Kumar Chatterjee (Shyama Sangeet), Asa Singh Mastana (folk music — Punjab), Bhubaneswar Mishra (Odissi music), Gavari Bhai (folk music — Rajasthan Staybhambhi Pandharpurkar (Laveni) and Sheikh Nazar (Burra Katha — Andhra Pradesh).

Lalit Kala Akademi Awards: In Painting sculpture and graphics the following persons won awards. The award carried a certificate and Rs. 10,000 in cash.

1. Veena Bhargava, painting (Chowringhee Crossing) 2. Gopal S. Adivrekar, painting (Painting Two) 3. Harish Srivastava, painting (Landscape) 4. Bireswor Bhattacharjee, painting (terrorists) 5. Aditya Basak, painting (Concealing-1) 6. R. M. Palaniappan, graphics (Document SSD 2086 Space Drawing Research Centre) 7. Basant Kashyap, relief collage (Lal Bati Aur Gadiyam) 8. Naresh Bharadwaj, Sculpture (untitled) 9. C. Dakshinamoorthy, sculpture (Women-1) and 10. Bipulkanti Saha, sculpture (Ramkinkar).

National Film Awards: In the 33rd National Film Awards of 1985, the following were the recipients:

Best Feature Film: 'Chidambaram' Malayalam) directed by G. Aravindan. Best Director: Shyam Benegal for the Hindi film 'Trikal'. Indira Gandhi Award for the Pest First Film of a Director: 'New Delhi Times', Director: Ramesh Sharma; Nargis Dutt Award for the Best Feature Film on National Integration: 'Sri Narayanaguru', directed by P. A. Backer; Best Children's Film: 'Aazadi ki ore' directed by P. S. Prakash, Best Feature Film: 'Bombay: Our City', directed by Anand Patwardhan.

Best Actor: Sahi Kapoor (New Delhi Times, Hindi); Best Actress: Suhasini (Sindhubhairavi, Tamil); Best Music Director: Ilaiyaraja (Sindhu Bhairavi); Best male singer: Jayachandran (Sri Narayanaguru); Best female singer; Chitra (Sindhu Bhairavi).

The regional language film awards (with the name of the director in brackets): Assamese — Agnisnaan (Dr. B. N. Saikia), Bengali — Parama (Aparna Sen), Hindi — Anantyatra (Nachiket and Jayco Patwardhan), Kannada — Bettada Hoovu (N. Lakshmi Narayana), Malayalam — Thinkalazcha Nalla Divasam (P. Padmarajan), Marathi — Pudhcha Paool (Raj Datt), Oriya — Hakim Oabu (Pranab Das), Tamil — Mudal Mariyadhai (Bharati Raja), Telugu — Sravanthi (Kranthi Kumar); and Bodo language — Alayaron (Jungdao Bodosa). Bodo is not a language specified in the Eighth Schedule of the Constitution.

Dada Saheb Phalke Award: For outstanding contribution to the cause of cinema: V. Shantaram. Previous recipients: Devika Rani Roerich, B.N. Sircar, Prithviraj Kapoor (poshumons), Pankaj Mullik, Ruby Myers, (Sulochana), B.N. Reddy, Dhiren Ganguli, Kanan Devi, Nitin Bose, R.C. Boral, Sohrab Modi, Naushad Ali, P. Jairaj, L.V. Prasad Durgakhote and Satyajit Ray.

THE UNITED NATIONS

The United Nations past 40, whatever its failures, still remains the hope and conscience of the world, more especially of the smaller nations among its 159 members. The UN and its 17 independent specialised agencies and 14 major Programmes and Funds embrace almost every man in every corner of the globe.

On the occasion of the 40th anniversary, 100-odd Presidents and Prime Ministers. Kings and dictators gathered at the 39-storied world organisation headquarters by the New York's East River, in September 1985.

The historic anniversary session of the General Assembly was attended by U.S. President Ronald Reagan, British Prime Minister Margarette Thatcher and Prime Minister Rajiv Gandhi. The Soviet Union was represented by their new Foreign Minister, Eduard Shevardnadze.

The UN was founded to maintain peace and security in a world that had just been passing through a devastating war and nuclear bombing.

Forty years later, although there has been no world war yet, numerous smaller wars and conflicts still rage or smoulder and the powers are divided over the threat posed by the nuclear weapons.

The world is also riven by differences between the rich and the poor—between developed nations and developing nations—over the need to bring about a new international economic order

A major issue that dominated the anniversary session was the apartheid regime in South Africa which has been the scene lately of the increasingly bloody confrontations between the depressed African people and the minority white rulers.

The common theme in the speeches of Rajiv Gandhi, Chinese Premier Zhao Ziyang, and Dumas, the French Foreign Minister, among others, was the imperative need for mankind to step back from the nuclear brink. The US President, while not hiding his distaste for Marxism-Leninism's "war with people" around the world, said he sought a "fresh start" in US-Soviet relations despite deep and abiding differences. Soviet leader Mikhail Gorbachev, in his message called for ending the arms race on Earth and preventing it in space, in an obvious reference to Reagan's *Star Wars* programme.

Rajiv Gandhi pointed to the "wide cracks" showing in the present world order and the contradiction between international order and nuclear weapons, freedom and racism, science and poverty. He commended the six-nation Delhi declaration issued earlier on nuclear disarmament as a "practical programme". Mr. Dumas, however, said that France would maintain its independent nuclear defence system until the superpowers give a clear lead in nuclear disarmament.

Japanese Prime Minister Nakasone "apologised" for Japan's "ultranationalism" that had led to World War II and promised to fight the revival of militarism in his country. Rajiv spoke for the non-aligned movement and the third world in urging a new consensus on development that will banish hunger and poverty.

Even though there were 150 items on the agenda of the anniversary session, everything submerged in the rhetoric of the world leaders. Not even a consensus declaration could materialise.

UN also celebrated the 25th anniversary of its decolonisation declaration consecutively with the territory it has tried hardest to liberate still far from independence. South-West Africa or Namibia represents one of the organisation's great frustrations among what is generally viewed as its successful effort to bring colonies to indepdendence. Since 1960, when the UN issued the declaration on de-colonisation, 59 territories inhabited by 80 million people have become independent or opted to join the comity of independent states.

Historic Charter. United Nations, an association of sovereign states bound by a Charter to maintain international peace and security came into being on 24th Oct. 1945. The Charter was signed by the delegates of 50 nations on 26th June, 1945 at San Francisco. The UN has now on its rolls almost all the independent countries of the world.

For a long time China was represented in the UN by Taiwan which styled itself Nationalist China. Communist China which truly represented China was kept out of the UN mainly on account of the US veto.

This anomaly was removed in 1971 by admitting Communist China as the representative of all China in the UN. Red China thus became a permanent member of the Security Council. Taiwan not only lost its permanent seat in the Council but also its primary membership of the UN.

New Economic Order. In Dec. 1974 the UN adopted a Charter of Economic Rights. This charter consisting of 34 articles is a landmark in the history of UN. It includes the right of each state "to freely exercise full permanent sovereignty over its wealth and natural resources, to regulate and exercise authority over foreign investments within its national jurisdiction and to nationalise, expropriate or transfer the ownership of foreign property".

The 1974 declaration of rights recognised the imperative necessity of reducing disparities between developed, developing and undeveloped countries of the world. It envisaged a New International Economic Order (NIEO). To achieve this new order the UN Development Programme (UNDP) was inaugurated in 1975 under a Director General of Development.

Principal Organs of the UN are: General Assembly, Secretariat, Security Council, Trusteeship Council, Economic and Social Council and International Court of Justice.

Head Quarters: First Avenue, UN Plaza, New York City, N.Y., USA.

General Assembly. The General Assembly of the UN is the nearest that the world has yet come to the visionary 'Parliament of Man'. The Assembly consists of the representatives of all the member states. Each state has one vote, but many send 5 representatives. The General Assembly meets at least once in a year. Specia sessions may be summoned by the Secretary General, on a request by the Security Council.

The General Assembly passes the annual budget of the UN and determines the contribution payable by each member. It receives and considers the reports of the special committees including the Security Council. Important questions are decided by a two-thirds majority and other questions by a smiple majority.

The General Assembly elects the non-permanent members of the Security Council, the members of the Economic and Social Council and the elected members of the Trusteeship Council. The Judges of the International Court of Justice are elected by the General Assembly, in conjunction with the Security Council. The General Assembly elects its own President and Vice Presidents every year.

Present President: Humayun Rasheed Choudhury (Bangladesh).

2. Security Council consists of 15 members, each of which has 1 vote. There are 5 permanent and 10 non-permanent members elected for a 2-year term by a two-thirds majority of the General Assembly. The permanent members have the power to veto any move.

Retiring members are not eligible for immediate re-election. Any other member of the United Nations will be invited to participate without vote in the discussion of questions specially affecting its interests.

The Presidency of the Security Council is held for 1 month in rotation by the member states in the English alphabetical order of their names.

Permanent Members: China, France, USSR, UK, USA. *Non-permanent Members:* Argentina, Bulgaria, Congo, West Germany, Ghana, Italy, Japan, the UAE, Venezuela and Zambia (as on January 1, 1987).

3. Economic & Social Council is responsible under the General Assembly for carrying out the functions of the United Nations with regard to international economic, social, cultural, educational, health and related matters.

The Economic and Social Council consists of 54 Member States elected by a two-thirds majority of the General Assembly. The Council has the following Regional Economic Commissions: ECE (Economic Commission for Europe, Geneva); ESCAP (Economic and Social Commission for Asia and the Pacific. Bangkok); ECLA (Economic Commission for Latin America, Santiago, Chile); ECA (Economic Commission for Africa, Addis Ababa).

India hikes Contribution

India has substantially increased its financial contributions to United Nations developmental funds and programmes by pledging about ten million dollars (about Rs. 125 crore) for 1987, thereby remaining the largest donor among developing countries.

Mr. C. R. Gharekhan, India's ambassador to the U.N., told a pledging conference at the U.N. that India would give Rs. 60 lakhs for U.N. Fund for Population Activities (UNFPA), which is 20 per cent more than the current year's contribution. A 10 per cent increase has raised India's contribution to UNICEF to Rs. 2.8 crore for 1987.

The largest Indian contribution is to UNDP, amounting to Rs. 7.9 crore. The contribution to U.N. volunteers fund has been increased by 50 per cent to $ 7,500. Other programmes and agencies to which India is contributing are U.N. environmental programme and habitat (one lakh dollars each), fund for womens development (20,000 dollars) and the fund for drug abuse control (15,000 dollars).

ECWA (Economic Commission for Western Asia, Baghdad).

4. Trusteeship Council. The Charter provides for an international trusteeship system to safeguard the interests of the inhabitants of territories which are not yet fully self-governing and which may be placed thereunder by individual trusteeship agreements. These are called trust territories.

All of the original 11 trust territories except one, the Pacific Islands (Micronesia), administered by the USA, have become independent or joined independent countries.

5. International Court. The International Court of Justice was created by an international treaty, the Statute of the Court, which forms an integral part of the United Nations Charter. All members of the United Nations are *ipso facto* parties to the Statute of the Court. There are 15 judges.

India's Dr. Nagendra Singh is the present President of the Court.

The Court has its seat at The Hague, but may sit elsewhere whenever it considers this desirable. The expenses of the Court are borne by the UN.

6. Secretariat is composed of the Secretary-General, who is the chief administrative officer of the organization, and an international staff appointed by him under regulations established by the General Assembly. However, the Secretary General, the High Commissioner for Refugees and the Managing Director of the Fund are appointed by the General Assembly. The first Secretary General was Trygve Lie (Norway), 1946-53; the second, Dag Hammarskjold (Sweden), 1953-61; the third, U. Thant (Burma), 1961-71; the fourth, Kurt Waldheim (Austria), 1972-81.

The financial year coincides with the calendar year; accountancy is in US$. Budget for 1984-85, $1,587,158,000.

Secretary-General: ***Javier Peres de Cuellar (Peru)***, appointed on 1 Jan. 1982 for a 5-year term.

The Secretary-General is assisted by Under-Secretaries-General and Assistant Secretaries-General.

United Nations System. The bulk of the work of the UN, measured in terms of money and personnel, is aimed at achieving the pledge made in Article 55 of the Charter to 'promote higher standards of living, full employment and conditions of economic and social progress and development.'

In addition to the 17 independent specialized agencies, there are some 14 major United Nations programmes and funds devoted to achieving economic and social progress in the developing countries.

UNDP—United Nations Development Programme is the world's largest agency for multilateral technical and pre-investment cooperation. It is the funding source for most of the technical assistance provided by the United Nations system, and UNDP is active in almost 150 countries and territories and in virtually every economic and social sector. UNDP assistance is provided only at the request of Governments and in response to their priority needs, integrated into over-all national and regional plans.

UNICEF—United Nations Children's Fund, established in 1946 as United Nations International Children's Emergency Fund to deliver post-war relief to children, later renamed United Nations Children's Fund, concentrates its assistance on development activities aimed at improving the quality of life for children and mothers indeveloping countries, During 1983, UNICEF was working in over 110 countries with a child population of some 1,300 m.

Executive Director: *James P. Grant (USA)*.

UNFPA—The UN Fund for Population Activities, carries out programmes in over 130 countries and territories. The Fund's aims are to build up capacity to respond to needs in population and family planning, to promote awareness of population problems in both developed and developing countries and possible strategies to deal with them; to assist developing countries at their request in dealing with population problems. More than 25% of international population assistance to developing countries is channelled through UNFPA.

Executive Director: ***Rafael M. Salas (Philippines)***.

Relief Agencies. Humanitarian relief to refugees and victims of natural and man-made disasters is also an important function of the UN system. Among the organizations involved in such relief activities are the Office of the UN Disaster Relief Co-ordinator (UNDRO), the Office of the UN High Commissioner for Refugees (UNHCR) and the UN Relief and Works Agency for Palestine Refugees in the Near East (UNRWA).

UNRWA was created by the General Assembly in 1949 as a temporary non-political agency to provide relief to the nearly 750,000 people who became refugees as a result of the disturbances during and after the creation of the State of Israel in the former British Mandate territory of Palestine.

Commissioner-General: *Olof Rydbeck (Sweden).*

UNHCR—The office of the United Nations High Commissioner for Refugees was established by the UN General Assembly with effect from 1 Jan. 1951, originally for three years. Since 1954, its mandate has been renewed for successive five year periods.

For its work on behalf of refugees around the world, UNHCR was awarded the Nobel Peace Prize in 1955 and again in 1981.

Headquarters: Palais des Nations, 1211, Geneva 10, Switzerland.

High Commissioner: *Poul Hartling (Denmark).*

Specialized Agencies. ***IAEA—The International Atomic Energy Agency***, came into existence on 29 July 1957. Its statute had been approved on 26 Oct. 1956, at an international conference held at UN Headquarters, New York. A relationship agreement links it with the United Nations. The IAEA had 112 member states in 1983.

Headquarters: Vienna International Centre, PO Box 100, A-1400 Vienna, Austria.

Director-General: ***Hans Blix (Sweden).***

UNIDO: United Nations Industrial Development Organisation. Agency promoting industrial co-operation and co-ordinating all UN operations in matters of industrial promotion. It provides developing and under-developed countries with advice on all aspects of industrial policy. Converted into a specialised agency of UN in 1985.

1987-Year for the Homeless

The United Nations has declared 1987 as the "international year of shelter for the homeless." Rampant urban growth, coupled with the increasing impverishment in the countryside, has made the issue of shelter one of the major priorities of the Third World.

According to UN estimates, the population in urban areas has been growing by 4 per cent a year for the last 30 years. In the last 10 years alone global urban population increased by another 350 million.

Population experts predict that in the next 20 years urban population will more than double. Conservative estimates of the projected urban population in AD 2000 put the number at 1.6 billion in developing countries alone.

The phenomenal urban growth is evident from the fact that in 1950 only 76 cities had a population of more than a million and more than half of them were in the west. According to the UN statistics, this trend will be reversed by Ad 2000. The 21st century will have no less than 440 such cities, and 284 of these will be in the Third World.

Headquarters: Vienna International Centre, Austria

Director-General: Domingo Stazon (Philippines)

ILO—International Labour Organisation established in 1919 as an autonomous part of the League of Nations, is an intergovernmental agency with a tripartite structure, in which representatives of governments, employers and workers participate. In 1969 it was awarded the Nobel Peace Prize. In 1984 it numbered 151 members.

The ILO consists of the International Labour Conference, the Governing Body and the International Labour Office.

Headquarters: International Labour Office, CH-1211 Geneva 22, Switzerland.

Director-General: *Francis Blanchard (France).* Chairman of the Governing Body: *B. G. Deshmukh (India).*

FAO—Food and Agriculture Organization. The UN Conference on Food and Agriculture in May 1943, at Hot Springs, Virginia, set up an Interim Commission in Washington in July 1943 to plan the Organization, which came into being on 16th October 1945.

FAO sponsors the World Food Programme (WFP) with the UN.

Headquarters: Viale delle Terme di caracalla, Rome, Italy.

Director-General: *Dr. Erdouard Saouma (Lebanon).*

UNESCO—***United Nations Educational, Scientific and Cultural Organization.*** A Conference for the establishment of an Educational, Scientific and Cultural Organization of the United Nations was convened by the Government of the UK in association with the Government of France, and met in London, 1 to 16 Nov. 1945. UNESCO came into being on 4 Nov. 1946.

UNESCO had 160 members in 1984.

WHO—World Health Organization. An International Conference, convened by the UN Economic and Social Council, to consider a single health organization resulted in the adoption on 22 July 1946 of the constitution of the World Health Organization. This constitution came into force on 7 April 1948.

Headquarters: 1211 Geneva 27. Regional Offices: Alexandria, Brazzaville, Copenhagen, Manila, New Delhi and Washington.

. Director-General: *Dr. Halfdan T. Mahler (Denmark).*

IMF—International Monetary Fund. The International Monetary Fund was established on 27 Dec. 1945 as an independent international organization and began operations on 1 March 1947; its relationship with the UN is defined in an agreement of mutual cooperation which came into force on 15 Nov. 1947. The first amendment to the Fund's articles creating the Special Drawing Rights (SDR) took effect on 28 July 1969 and the second amendment took effect on 1 April 1978.

Headquarters: 700 19th St. NW, Washington, D.C., 20431. Offices in Paris and Geneva.

Managing Director: *Jacques de Larosiere* (France).

World Bank. ***IBRD—International Bank for Reconstruction and Development*** conceived at the Bretton Woods Conference, July 1944, the 'World Bank' began operations in June 1946. Its purpose is to provide funds and technical assistance to facilitate economic development in the poorer countries.

Headquarters: 1818 H.St. NW Washington, D.C.

President: *Barbar Conable (USA)*

IDA—International Development Association. A lending agency which came into existence on 24 Sept. 1960. Administered by the World Bank, IDA is open to all members of the Bank.

IFC—International Finance Corporation, an affiliate of the World Bank, was established in July 1956. Paid-in capital at 30 June 1984 was $544.2m, subscribed by 125 member countries. In addition, it has accumulated earnings of $230.1 m. IFC supplements the activities of the World Bank by encouraging the growth of productive private enterprises in less developed member countries.

President: *Barbar Conable (USA)*

ICAO—International Civil Aviation Organization. The Convention providing for the establishment of the International Civil Aviation Organization was drawn up by the International Civil Aviation Conference held in Chicago from 1 Nov. to 7 Dec. 1944. A Provisional International Civil Aviation Organization (PICAO) operated for 20 months until the formal establishment of ICAO on 4 April 1947.

Headquarters: 1000 Sherbrooke St. West, Suite 400, Montreal, Quebec, Canada H3A 2R².

President: *Dr. Assad Kotaite (Lebanon)*. Secretary-General: *Yves Lambert (France)*.

Communication. ***UPU—The Universal Postal Union*** was established on 1 July 1875, when the Universal Postal Convention adopted by the Postal Congress of Berne on 9 Oct. 1874 came into force. The UPU was known at first as the General Postal Union, its name being changed at the Congress of Paris in 1878. In 1980 there were 158 member countries.

Headquarters: Weltpoststrasse 4, 3000 Berne 15, Switzerland.

Director-General: *Mohamed Ibrahim Sobhi (Egypt)*.

ITU—International Telecommunication Union. The International Telegraph Union, founded in Paris in 1865, and the International Radiotelegraph Union, founded in Berlin in 1906, were merged by the Madrid Convention of 1932 to form the International Telecommunication Union. ITU came into being on 1 Jan. 1934.

Headquarters: Place des Nations, 1211 Geneva, Switzerland.

Secretary-General: *Mohammed Mili (Tunisia)*.

WMO—World Meteorological Organization. A Conference of Directors of the International Meteorological Organization (set up in 1873), meeting in Washington in 1947, adopted a Convention creating the World Meteorological Organization. The WMO was formally established on 19 March 1951, when the first session of its Congress was convened in Paris.

Headquarters: Case Postale 5, CH-1211, Geneva 20, Switzerland.

Secretary-General: *G.O.P. Obasi (Nigeria)*.

IMO—The International Maritime Organization, until 1982 known as Inter-Governmental Maritime Consultative Organization (IMCO), was established as a specialized agency of the UN by a convention drawn up at the UN Maritime Conference held at Geneva in Feb./March 1948.

Headquarters: 4 Albert Embankment, London SE1 7SR.

Secretary-General: *C. P. Srivastava (India)*.

World Trade. ***GATT—The General Agreement on Tariffs and Trade*** was negotiated in 1947 and entered into force on 1 Jan. 1948. Its 23 original signatories were members of a Preparatory Committee appointed by UN Economic and Social Council to draft the charter for a proposed International Trade Organization. Since this charter was never ratified, the General Agreement, intended as an interim arrangement, has instead remained as the only international instrument laying down trade rules accepted by countries responsible for most of the world's trade. In Nov. 1983 there were 90 contracting parties, with a further 31 countries participating under special arrangements.

Headquarters: Centre William Rappard, 154 rue de Lausanne, 1211 Geneva 21, Switzerland.

Director-General: *Arthur Dunkel (Switzerland)*.

WIPO—World Intellectual Property Organization. The Convention establishing WIPO was signed at Stockholm in 1967 by 51 countries, and entered into force in April 1970. In Dec. 1974 WIPO became a specialized agency of the UN.

Headquarters: 34, Chemin des Colombettes, 1211 Geneva 20, Switzerland.

Director-General: *Arpad Bogsch (USA)*.

IFAD—International Fund for Agricultural Development. The establishment of IFAD was one of the major actions proposed by the 1974 World Food Conference. The agreement for IFAD entered into force on 30 Nov. 1977 following attainment of initial pledges of $1,000 m. and the agency began its operations the following month.

Headquarters: 107 Via del Serafico, Rome, Italy.

President: *Abdelmushin Al-Sudeary (Saudi Arabia)*.

Members of the UN

159 members as in 1986

Member	Year of Admission
Afghanistan	1946
Albania	1955
Algeria	1962
Angola	1976
Antigua & Barbuda	1981
Argentina★	1945
Australia★	1945
Austria	1955
Bahamas	1973
Bahrain	1971
Bangladesh	1974
Barbados	1966
Belgium★	1945
Belize	1981
Benin†	1960
Bhutan	1971
Bolivia★	1945
Botswana	1966
Brazil★	1945
Brunei Darussalam	1984
Bulgaria	1955
Burkina Faso☆	1960
Burma	1948
Burundi	1962
Byelorussia	1945
Cameroon	1960
Canada★	1945
Cape Verde	1975
Central African Republic	1960
Chad	1960
Chile★	1945
China★‡	1945
Colombia★	1945
Comoros	1975
Congo	1960
Costa Rica★	1945
Cuba★	1945
Cyprus	1960
Czechoslovakia★	1945
Democratic Kampuchea†	1955
Denmark★	1945
Djibouti	1977
Dominica	1978
Dominican Republic★	1945
Ecuador★	1945
Egypt★	1945
El Salvador★	1945
Equatorial Guinea	1968
Ethiopia★	1945
Fiji	1970
Finland	1955
France★	1945
Gabon	1960
Gambia	1965
German Democratic Republic	1973
Germany, Federal Republic of	1973
Ghana	1957
Greece★	1945
Grenada	1974
Guatemala★	1945
Guinea	1958
Guinea-Bissau	1974
Guyana	1966
Haiti★	1945
Honduras★	1945
Hungary	1955
Iceland	1946
India★	1945
Indonesia‡	1950
Iran★	1945
Iraq★	1945
Ireland	1955
Israel	1949
Italy	1955
Ivory Coast	1960
Jamaica	1962
Japan	1956
Jordan	1955
Kenya	1963
Kuwait	1963
Lao People's Democratic Republic	1955
Lebanon★	1945
Lesotho	1966
Liberia★	1945
Libyan Arab Jamahiriya	1955
Luxembourg★	1945
Madagascar	1960
Malawi	1964
Malaysia★★	1957
Maldives	1965
Mali	1960
Malta	1964
Mauritania	1961
Mauritius	1968

Mexico★	1945
Mongolia	1961
Morocco	1956
Mozambique	1975
Nepal	1955
Netherlands★	1945
New Zealand★	1945
Nicaragua★	1945
Niger	1960
Nigeria	1960
Norway★	1945
Oman	1971
Pakistan	1947
Panama★	1945
Papua New Guinea	1975
Paraguay★	1945
Peru★	1945
Philippines★	1945
Poland★	1945
Portugal	1955
Qatar	1971
Romania	1955
Rwanda	1962
St. Christopher and Nevis	1983
Saint Lucia	1979
Saint Vincent and the Granadines	1980
Samoa, Western	1976
Sao Tome and Principe	1975
Saudi Arabia★	1945
Senegal	1960
Seychelles	1976
Sierra Leone	1961
Singapore	1965
Solomon Islands	1978
Somalia	1960
South Africa★	1945
Spain	1955
Sri Lanka	1955
Sudan	1956
Suriname	1975
Swaziland	1968
Sweden	1946
Syrian Arab Republic★‡‡	1945
Tanzania‡‡	1961
Thailand	1946
Togo	1960
Trinidad and Tobago	1962
Tunisia	1956
Turkey	1945
Uganda	1962
Ukrainian Soviet Socialist Republic★	1945
USSR	1945
United Arab Emirates	1971
United Kingdom	1945
USA★	1945
Uruguay†	1945
Vanuatu	1981
Venezuela★	1945
Viet Nam	1977
Yemen Arab Republic	1947
Yemen, PDR	1967
Yugoslavia★	1945
Zaire	1960
Zambia	1964
Zimbabwe	1980

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† Formerly Dahomey.

‡ By resolution 2758 (XXVI) of 25 Oct. 1971, the General Assembly decided "to restore all its rights to the People's Republic of China and to recognize the representatives of its Government as the only legitimate representatives of China to the United Nations, and to expel forthwith the representatives of Chiang Kai-shek from the place which they unlawfully occupy at the United Nations and in all the organizations related to it".

† Formerly Cambodia.

‡ By letter of 20 January 1965, Indonesia announced its decision to withdraw from the United Nations "at this stage and under the present circumstances". By telegram of 19 Sept. 1966, it announced its decision "to resume full co-operation with the United Nations and to resume participation in its activities". On 28 Sept. 1966, the General Assembly took note of this decision and the President invited the representatives of Indonesia to take seats in the Assembly.

★ Original Member.

★★ The Federation of Malaya joined the United Nations on 17 Sept. 1957. On 16 Sept. 1963, its name changed to Malaysia, following the admission to the new federation of Singapore, Sabah (North Borneo) and Sarawak. Singapore became an independent State on 9 August 1965 and a United Nations Member on 21 Sept. 1965.

‡‡ Egypt and Syria were original Members of the United Nations from 24 Oct. 1945. Following a plebiscite on 21 Feb. 1958, the United Arab Republic was established by a union of Egypt and Syria and continued as a single Member. On 13 Oct. 1961, Syria resumed its status as an independent State and simultaneously its United Nations membership. On 2 Sept. 1971, the United Arab Republic changed its name to Arab Republic of Egypt.

†† Tanganyika was a United Nations Member from 14 Dec. 1961. Zanzibar was a Member from 16 Dec. 1963. Following the ratification on 26 April 1964 of Articles of Union between Tanganyika and Zanzibar the United Republic of Tanganyika and Zanzibar continued as a single Member changing its name to United Republic of Tanzania on 1 November, 1964.

‡ By an amendment of the UN Charter on Aug. 31, 1964.

☆ Formerly Upper Volta.

WORLD ORGANIZATIONS

Among the international organization or associations other than the United Nations are the six decade-old Commonwealth and the world's newest regional organisation, SAARC—South Asian Association for Regional Co-operation of India, Maldives, Pakistan, Bangladesh, Sri Lanka, Bhutan and Nepal.

ADB—The Asian Development Bank was initially sponsored by the ECAFE and started functioning in 1966. In 1975, ADB had 27 regional members and 14 non-regional members.

In June 1974, ADB launched the Asian Development Fund (ADF) with a view to providing concessional credits to needy members.

Amnesty International: A world-wide human rights organisation with headquarters in London. The Organisation began on May 28, 1961 with a newspaper appeal by the British Lawyer Peter Berenson. Now has more than 5,00,000 members in more than 150 countries. Won Nobel Prize for Peace in 1977.

Secretary-General: Ian Martin (Britain)

Headquarters: Manila, Philippines.

The Arab League is the outcome of a national awakening of the Arabs, following the fall of the Ottoman Empire in the First World War. It was formally instituted on March 22, 1945.

The Arab League consists of a Council, a Secretary General and a few permanent committees.

The League considers itself a regional organization within the framework of the UN at which its Secretary-General is an observer.

Member countries (21): Algeria, Bahrain, Djibouti, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, P.L.O., Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, UAE, PDR of Yemen and Yemen Arab Republic.

Secretariat: Tunis.

Secretary-General: Chedli Klibi (Tunisia).

ASEAN—The Association of South East Asian Nations is a regional organization formed by the governments of Indonesia, Malaysia, the Philippines, Singapore and Thailand through the Bangkok Declaration which was signed by the Foreign Ministers of ASEAN countries on 8 Aug. 1967. Brunei joined in 1984. Its aim is to accelerate economic progress and maintain the economic stability of South East Asia.

Each ASEAN capital has an ASEAN National Secretariat. The central secretariat for ASEAN is located in Jakarta, Indonesia, and is headed by the Secretary General, a post that revolves among the member states in alphabetical order every 2 years. Bureau directors and other officers of the ASEAN Secretariat remain in office for 3 years.

Secretary General: Phan Wannamethee (Thailand).

Colombo Plan. Founded in 1950 to promote the development of newly independent Asian member countries, the Colombo Plan has grown from its modest beginning as a group of seven Commonwealth nations into an international organization of 26 countries.

Member Countries: Afghanistan, Australia, Bangladesh, Bhutan, Burma, Kampuchea, Canada, Fiji, India, Indonesia, Iran, Japan, Republic of Korea, Lao People's Democratic Republic, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, UK and USA.

Headquarters: Colombo Plan Bureau, 12 Melbourne Avenue, PO Box 596, Colombo 4, Sri Lanka.

Commonwealth. The 40-nation Commonwealth represents a third of the nations of the world.

The idea of a Commonwealth of Nations comprising Great Britain, the Dominions and other Territories in the British Empire, was first accepted at the Imperial Conference of 1926. In 1931, the Statute of Westminster recognised the status of the Dominions and defined the relations of the British Crown to the Dominions. The other territories were entitled to become members of the Commonwealth on attaining full self-government. In 1947, the office of the Secretary of State for Dominions was abolished and the Secretary of Commonwealth Relations assumed charge.

The Commonwealth has no written constitution which regulates its functions. Its members are autonomous countries associated with Britain, equal in status, in no way subordinate to one another in any aspect of their domestic or foreign affairs, though united by a common allegiance to the Crown, and freely associated as members of the British Commonwealth of Nations.

Some of the members like Canada, Australia and New Zealand recognise the Queen as the titular head of their States and have Governors-General appointed by the Queen on the recommendation of the State Cabinets. Some like India and Sri Lanka, who have elected Presidents of their own as Heads of State, recognise the Queen as the Head of the Commonwealth only.

Members of the Commonwealth are represented in other Commonwealth countries by diplomatic officers called High Commissioners in the place of Ambassadors representing non-Commonwealth countries.

Britain's entry into the European Economic Community or the European Common Market in 1972 has not altered the relations of Britain with the Commonwealth countries, while it has increased the opportunities of Commonwealth countries to negotiate advantageous commercial agreements with the EEC. India, Sri Lanka and Bangladesh have already established co-operative commercial agreements with the Community.

The present member countries of the Commonwealth are as follows:

Australia, Antigua and Barbuda, Bahamas, Bangladesh, Barbados, Belize, Botswana, Brunei, Canada, Cyprus, Dominica, Fiji, The Gambia, Ghana, Grenada, Guyana, India, Jamaica, Kenya, Kiribati, Lesotho, Malawi, Malaysia, Maldives, Malta, Mauritius, Nauru, New Zealand, Nigeria, Papua New Guinea, St. Christopher and Nevis, Saint Lucia, St. Vincent, Seychelles, Sierra Leone, Singapore, Solomon Islands, Sri Lanka, Swaziland, Tanzania, Tonga, Trinidad and Tobago, Tuvalu, Uganda, United Kingdom, Vanuatu, Western Samoa, Zambia and Zimbabwe.

CHOGM—Commonwealth Heads Of Governments Meet has become an important international event. India hosted the Summit in 1983 when Prime Minister Indira Gandhi presided over the deliberations. The Summit at Nassau, Bahamas, in October 1985 urged the super-powers to achieve their objectives of preventing an arms race in space and terminating it on the Earth. "In the world of today and tomorrow, international co-operation is not an option, but a necessity"—the Meet declared.

Canada will host the next Summit in 1987.

Headquarters: Marlborough House, Pall Mall, London, SW 1Y 5HX.

Secretary General: Shridath S. Ramphal (Guyana).

Council of Europe: In 1948 the 'Congress of Europe', bringing together at The Hague nearly 1,000 influential Europeans from 26 countries, called for the creation of united Europe, including a European Assembly. This proposal, examined first by the Ministerial Council of the Brussels Treaty Organization, then by a conference of ambassadors, was at the origin of the Council of Europe, which is, with its 21 member States, the widest organization bringing together all European democracies.

The Statute of the Council was signed at London on 5 May 1949 and came into force 2 months later. The founder members were Belgium, Denmark, France, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden and the UK. Turkey and Greece joined in 1949, Iceland in 1950, the Federal Republic of Germany in 1951 (having been an associate since 1950), Austria in 1956, Cyprus in 1961, Switzerland in 1963, Malta in 1965, Portugal in 1976, Spain in 1977 and Liechtenstein in 1978.

Headquarters: Palais de l'Europe, 67006, Strasbourg, Cedex, France.

Secretary General: Marcelino Oreja Aguirre (Spain).

COMECON—Council for Mutual Economic Assistance. Founder members are USSR, Bulgaria, Czechoslovakia, Hungary, Poland and Romania. Later admissions were Albania (1949, ceased participation 1961), German Democratic Republic (1950), Mongolia (1962), Cuba (1972), Vietnam (1978). In 1964 Yugoslavia concluded an agreement with CMEA whereby Yugoslavia would participate in the work of some CMEA bodies (at present 21). Afghanistan, Angola, Ethiopia, Laos, Mexico, Mozambique, Nicaragua and the People's Democratic Republic of Yemen attend CMEA sessions as observers.

Headquarters: Prospekt Kalinina, 56, Moscow, G-205.

Secretary:, V.V. Sychev (appointed 1983).

ECSC—The European Coal and Steel Community was created in pursuance of a treaty signed by six countries of Europe, in Paris in 1951. The countries were: France, Belgium, the Netherlands, Luxembourg, Federal Republic of Germany and Italy. The treaty affirmed a closer political union of the six countries and created a common market for coal, iron and steel.

The EEC—The European Economic Community, commonly known as the ECM—European Common Market, was brought into existence by the Treaty of Rome of March 25, 1957, signed by the six countries of ECSC—France, Belgium, the Netherlands, Luxembourg, Federal Republic of Germany and Italy. Later Britain, Ireland, Denmark and Norway signed the treaty of accession, but Norway withdrew. With Greece, Spain and Portugal joining lately the EEC now has a membership of 12 countries.

EEC has become the world's largest and most prosperous trading area, with a population of 320 millions—larger than that of any superpower.

The Treaty of Rome guarantees certain rights to the citizens of all member States (e.g. the outlawing of economic discrimination by nationality, and equal pay for equal work as between men and women) and sets out certain other areas where secondary legislation is to fill in the details.

EFTA—European Free Trade Association was formed in 1960, as the result of a convention signed by seven countries of Europe at Stockholm. The countries were UK, Austria, Denmark, Norway, Sweden, Switzerland and Portugal. This Association was formed on the pattern of the EEC and has the same objectives. The seven countries who formed the EFTA were generally called the Outer Seven, in contradistinction to the six countries of the EEC, who were called the Inner Six.

Headquarters: Brussels.

The European Free Trade Area (see EEC) has provided common ground for economic co-operation among fifteen European countries—Belgium, France, Germany (West), Italy, Luxembourg, the Netherlands (original six of EEC), Denmark, Ireland, UK (who joined the ECC in 1972). Austria, Iceland, Norway, Portugal, Sweden and Switzerland (the remaining members of the EFTA).

EURATOM— The European Atomic Energy Community was formed in pursuance of a treaty signed in Rome in 1957 by the six countries who formed the ECSC and the EEC. The work of the EURATOM is controlled by the same organs as those of the EEC. But the executive powers are vested in a commission of 5 members nominated by the Council of Ministers and advised by a Scientific and Technical Committee of 20 members and an Economic and Social Committee of 101 members. All major decisions are, however, taken by the Council of Ministers which is formed of one minister from each member state. The object of the EURATOM is the development of nuclear energy for peaceful purposes.

Headquarters: Brussels, Belgium.

The European Parliament is composed of 142 parliamentary representatives from the six countries of Europe who are signatories to the Treaty of Paris (1951) which formed the ECSC and the Treaty of Rome (1957) which formed the EEC and the EURATOM. The delegates to the parliament are elected by the respective legislatures of the member countries in fixed proportions.

Headquarters: Luxembourg.

ESRO— The European Space Research Organization was formally established in 1964 to promote collaboration among European States in space research and technology exclusively for peaceful purposes. The members are Belgium, Denmark, France, West Germany Italy the Netherlands, Spain, Sweden, Switzerland and UK. Austria, Ireland and Norway praticipate as observers.

Headquarters: Paris, France.

The French Community is an organization like the British Commonwealth. It offers to the French overseas territories, which manifest their will to adhere to it, new institutions based on the common idea of liberty, equality and fraternity and conceived with a view to their democratic evolution. This principle was accepted and promulgated by the Constitution of the (Fifth) French Republic which came into force in 1953.

Independent members of the Community are: 1. French Republic, 2. Central African Republic, 3. Republic of Congo, 4. Gabon, 5. Senegal, 6. Chad, 7. Madagascar, 8. Djibouti.

IATA— The International Air Transport Association was founded in 1945 to promote safe, regular and economical air transport and to provide a forum for collaboration. At present there are 40 international airlines (active members) and 19 domestic airlines (associate members).

The Annual General Meeting is the ultimate authority in the Association. The Executive Committee consists of 18 elected members. *Headquarters:* Montreal, Canada and Geneva, Switzerland.

INTERPOL: 138-Nation Police Commission, established in 1923, to co-ordinate police activities of participating nations with headquarters in Paris. After a terrorist bomb blast in May, 1986, it was decided to shift the headquarters to Lyons.

NATO— The North Atlantic Treaty Organization. In 1949 the foreign ministers of Belgium, France, Luxembourg, the Netherlands, UK, Canada, Denmark, Iceland, Italy, Norway, Portugal and USA met in Washington and signed the North Atlantic Treaty. Greece and Turkey joined the Treaty in 1951, the Federal Republic of Germany in 1955 and Spain in 1982. Thus NATO is an organization made up of 13 European states, two American states (Canada and USA) and an Asiatic state (Turkey).

The Council is the supreme body of the NATO. It consists of the ministers of member states. The Secretary General is appointed by and responsible to the Council

Headquarters: Brussels, Belgium

Secretary General: Lord Carrington (UK)

OAS— The Organization of American States. The Charter of the OAS was adopted in April 1948, at the ninth International Conference of American States at Bogota, Colombia.

Twenty-two American countries are members of the organization, with equal rights, each country possessing one vote. The members are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Trinidad and Tobago, Venezuela and USA. In Jan. 1962 Cuba was excluded from the OAS at a special meeting held at Punta del Este, Uruguay.

Headquarters: Washington DC., USA.

Secretary General: Joao Clemente Baena Soares.

OAU—The organization of African Unity came into being in May 1963, when the heads of 30 African States met at Addis Ababa and signed a charter establishing a common organization for all African states.

Its chief objects are unity and solidarity among African States, elimination of colonialism and defence of the independence of member states. The supreme body in the OAU is the Conference of Heads of States or Governments. The official languages of the organisation are French and English in addition to all the native African Languages.

The organization has 50 member-states (1984).

Headquarters: African Unity House, Addis Ababa, Ethiopia, Chairman: Mengistu Haile Mariam (Ethiopia) *Secretary-General:* Dr. Peter U. Onu (Nigeria).

OECD—The Organization for Economic Co-operation and Development was formed in 1961 to replace the Organization for European Economic Co-operation (OEEC) which was started immediately after the Second World War for the reconstruction of war-ravaged European states. The OEEC was formed in response to an offer of aid from the US Secretary of State Marshall. This aid, since called the Marshall Aid, was to be used to rehabilitate the economies of European states ruined by the war. A conference of European states was held in Paris in 1948 to accept the proposal.

The OEEC changed its name in 1961 as OECD. The change indicates the altered status of the organisation. It is no longer a purely European organisation. USA and Canada have joined it as full members.

Headquarters: Paris, France. Members: 24.

OPEC—The Organisation of petroleum Exporting Countries was the culmination of a long drawn out tug of war between international oil companies and the petroleum exporting countries. Most of these companies were gigantic cartels controlling production in more than one state. It was in their option to increase or reduce petroleum production in various countries and to manipulate prices. Very often they played one producing country against another by adopting various devices that affected the economy of the producing states without reducing the companies' profits.

The immediate provocation for the formation of the OPEC was provided by the announcement of oil companies that they were reducing the prices of Middle East crude. This meant that the countries concerned would be losing proportionately. A conference called together at Baghdad in 1962 decided to form the OPEC. This conference was attended by the representatives of Iraq, Kuwait, Saudi Arabia (Arab Muslim states), Iran, a non-Arab but Muslim state, and Venezuela, a non-Arab, non-Muslim state in far away South America. These countries at that time controlled 80 per cent of the world oil trade.

Membership (1981). Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela. Membership is open to any other country having substantial net exports of crude petroleum, which has fundamentally similar interests to those of member countries.

OPEC Fund: The Fund was established in 1976 to provide financial aid to developing countries, other than OPEC members, on advantageous terms.

Headquarters: Obere Donaustrasse 93, A-1020 Vienna, Austria.

Chairman: Rilwanu Lukman, (Nigeria)

Acting Secretary-General: Dr. Fadhil JIAI-Chalabi (Iraq).

Red Cross: International society for relief of suffering in time of war or disaster. International Committee of Red Cross founded (1863) on advocacy of J.H. Dunant (1828-1910). Delegates from 14 countries adopted Geneva Convention (1864), providing for neutrality of personnel treating wounded, etc. Over 100 national Red Cross societies now exist. Awarded Nobel Peace Prize (1917, 1944, 1963).

The 1986 Summit was held in Bangalore and Thimpu will host the 1987 one. (see Special Feature)

The Warsaw Pact. On 14 May 1955 the USSR, Albania, Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland and Romania signed, in Warsaw, a 20-year treaty of friendship and collaboration, after the USSR had (on 7 May) annulled the 20-year treaties of alliance with the UK (1942) and France (1944). This was renewed for another term.

It is estimated (1981) that the armed forces of the Warsaw Pact countries total 4.82 m., including 3.71 m. Russians, compared with 4.99 m. NATO forces.

From 1962 Albania was no longer invited to the Warsaw Pact meetings although not formally expelled.

Two Soviet divisions are stationed in Poland, 20 divisions in German Democratic Republic. 4 divisions in Hungary and 5 in Czechoslovakia.

Headquarters: Moscow, USSR.

WCC—The World Council of Churches was formally constituted on 23 Aug. 1948, at Amsterdam, by an assembly representing 147 Churches from 44 countries. By 1984 the member Churches numbered over 300, from more than 100 countries.

The World Council was founded by the coming together of several diverse Christian movements. On 13 May 1938 at Utrecht a provisional committee was appointed to prepare for the formation of a World Council of Churches. It was under the chairmanship of William Temple, then Archbishop of York.

Presidium: Dr. Marga Buhrig (Switzerland), Most Rev. W. P. K. Makhulu (Botswana), Dame R. Nita Barrow (Barbados), Bishop Johannes Hempel (German Democratic Republic). Dr. Lois Wilson (Canada)

tropolitan Paulos Mar Gregorios (India), narch Ignatios IV (Syria).
cretary-General: Dr. Emilio Castro (Uruguay)

Office: PO Box 66, 150 route de Ferney 1211 Geneva 20, Switzerland.

NAM'S WAR ON APARTHEID

The 25-year old Non-Aligned Movement seems to have come of age. Being the greatest peace movement on earth holding together 101 nations representing two thirds of the humanity, NAM shed its passive role to declare "the final assault on apartheid" in 1986.

NAM held the 25th anniversary session in frican soil specially with this aim. Harare, apital of Zimbabwe, one of the Frontline ates, hosted the 7 day summit, which also aw the Indian Prime Minister Rajiv Gandhi anding over the Chairmanship of the move- ent to Prime Minister Robert Mugabe, for e next three years.

ulwark of Peace. Since founding of e movement at Belgrade on September 1, 961, the NAM has come to represent the oice of an overwhelming segment of man- ind. Since its inception, it has emerged as e bulwark of peace, a shield against xternal pressures and a catylist of a new orld economic order based on equality and stice.

Harare summit signalled an intensification f the battle against apartheid, vestiges of olonisalism, foreign interference and unjust conomic order.

Among the major conflicts that drew the tention of the NAM summit was the six year d war between Iran and Iraq. Nearly every ajor trouble spot in the world featured in AM summit — Lebanon, Afghanistan, icaragua, Libya, Sri Lanka, Morocco, Viet- am and Kampuchea.

Harare summit adopted a package of stiff economic measures" against South Africa to ompel the racist regime to dismantle its onoxious system of apartheid.

A special declaration on Southern Africa, nanimously approved by the summit, made clear that the measures contained in the ackage would be applied against Pretoria ending the adoption of "comprehensive and andatory" sanctions by the United Nations ecurity Council.

The summit urged the United Nations to ke such a step without any further loss of me.

Sanctions. The package contained, among other measures, prohibition of transfer of technology to South Africa cessation of export, sale or transport of oil, snapping of air links, and termination of any visa free entry privileges and promotion of tourism to South Africa.

The summit demanded a special session of theUN General Assembly to ensure the independence of Namibia. It also set up a committee comprising member countries to plead the case of Nambia in the UN.

It set up a committee of Foreign Ministers to visit the United States, Britain, West Germany and Japan to persuade the governments to agree to the imposition of sanctions against South Africa.

India is included in both the committees.

The countries agreed to contribute generously to the proposed solidarity fund for Southern Africa. They rejected the US policy of constructive engagement with Pretoria.

The summit adopted "the Harare appeal on disarmament" and the reports of the political and economic committees.

Zimbabwe Prime Minister Robert Mugabe, who took over as NAM chairman from Prime Minister Rajiv Gandhi, in his closing address made an appeal to Iran and Iraq to put an end to their tragic conflict.

The need for south-south co-operation was stressed and Dr. Mugabe welcomed the establishment of the independent commission of the south under the chairmanship of former Tanzanian President Julius Nyrere.

Ten Evils. The Harare summit demanded immediate intensification of the struggle against 10 identified evils afflicting the international community — imperialism, colonialism, neocolonialism, apartheid, racism, zionism, all forms of destiabilisation, foreign occupation, domination and hegemonism

Further, short of supplying arms, the leaders of the 101 non-aligned countries pledged to extend all support, in every other form to the liberation movement to the liberation movement in Southern Africa.

On the economic front they called for a halt to the growing protectionism and mounting external debt crisis.

A 25-member committee of Foreign Ministers has been constituted to work out a plan of action to bring about an international economic order based on justice and equality.

Africa Fund. The summit called for the creation of an Africa fund. A nine-member committee headed by India has been constituted,for the mobilisation of the fund, t extend support to the front line states an strengthen their economies in the face c sanctions and possible economic retaliatio by South Africa.

0 Km. 400
ZAIRE
ANGOLA
ZAMBIA
LUSAKA
Mokeni
HARARE
NAMIBIA
ZIMBABWE
BOTSWANA
MOZAMBIQUE
GABERONES
PRETORIA
SWAZILAND
SOUTH AFRICA
LESOTHO
INDIAN OCEAN
CAPE TOWN

The committee for mobilising and opera ing the Africa fund will be chaired by M Gandhi. The vice-chairman will be Zambia President Kenneth Kaunda. The other mem bers are Algeria, Zimbabwe, Nigeria, Cor go, Argentina, Yugoslavia and Peru.

NAM, torch bearer of the thirdworld whic views itself as an alternative bloc of nations t the two superpowers and their satellites, wa established on September 1, 1961, in Be grade, Yugoslavia. Since then, its mem bership has quadrupled to encompass two fifths of the world's people.

Jawaharlal Nehru former Prime Minister c India had been its first and greatest apostle As early as March 1947, Nehru said, "For to long, we of Asia have been petitioners i western courts and chancellories. That stor must now belong to the past. We propose t stand on our own feet ...... We do not intend t be playthings of others." It was in fact the lat V.K. Krishna Menon, India's delegate to th UN and late Defence Minister, who coine the very expression 'Non-Aligned'.

Free From the Yoke. Here is th background that led to the formation of th Non-Aligned Movement. After the secon world war, the USSR and the USA emerge as superpowers. Meanwhile colonial in perialism also started to recede. India an Burma became independent in 1947. Indone sia followed suit in 1949. In Africa many b countries threw off the colonial yoke. Lesse countries in Africa, Asia and the Pacific als became independent one after the other

The superpowers tried to win over a many new States as possible to one or th other of them. This attempt brought in wh has been called a 'cold war' between USS which championed the socialist countri and USA who posed as the leader of fre democracies. It is against this cold blea atmosphere that Nehru put forth his idea non-alignment.

Asian Initiative. A conference likeminded Asian countries became th forum for the birth of the movement. Th conference at Bandung (Indonesia) in Ap

55 opened the era of a common agreement ong all Asian nations to keep aloof from ernational complications and to settle mat- s among themselves on certain principles. e principles adopted at the Bandung nference were later known collectively as *nch Sheel. They were: (i) Mutual respect r each other's territorial integrity and vereignty, (ii) Mutual non-aggression, (iii) utual non-interference in each other's fairs, (iv) Equality and mutual benefit and) Peaceful co-existence.*

The ideals propounded at Bandung were ven a practical shape at Brioni in Yugosla- a at a meeting of Nehru (India), Marshal to (Yugoslavia) and Col. Nasser (Egypt) in ly 1956. In pursuance of the decisions taken this informal meeting of the three great aders, the first Summit Meeting of the on-aligned countries took place at Bel- rade (Yugoslavia) in Sept. 1961.

The growth of the Movement was phe- omenal. From a mere 25 countries who ined the Belgrade summit (1961) the num- er had increased to 101 at the Delhi summit 983). It rose to 101 by September, 1985 hen the Non-Aligned Foreign Ministers et to decide on the venue of the 8th Summit 1986.

The basic principle of non-alignment was explained by Nehru thus "....we propose as far as possible to keep away from power blocs of groups aligned against each other....we propose to keep on the closest terms of friendship with all countries, unless they themselves create difficulties. We shall be friends of America and intend co-operating with them. We intend also to co-operate fully with the Soviet Union."

A list of previous summits:

Belgrade, September 1–6, 1961. President Josip Broz Tito of Yugoslavia was chairman and 25-member countries took part.

Cairo, Egypt, October, 5–10, 1964. The Egyptian president, Mr. Gamal Abdel Nasser was chairman and 47 countries participated. Eighteen new members from Africa reflected the breakaway from colonial rule.

Lusaka, Zambia, September 8–10, 1970. President Kenneth Kaunda, one of Africa's new leaders and now an elder statesman in the continent, was chairman and 53 nations took part.

Algiers, Algeria, September 5–9, 1973. The Algerian President, Mr. Houari Boumedienne was chairman. Participating were 75 countries with full membership, along with 15 guerilla movements from 12 countries.

Colombo, Sri Lanka, August 11–14, 1976. The Sri Lankan Prime Minister, Mrs. Sirima

SUMMIT
Haraxe
EIGHTH NON-ALIGNED SUMMIT
8
HARARE — 1986

The Symbol and the Votary: Harare summit emblem and Robert Mugabe, the President of NAM.

vo Bandaranaike, the non-aligned movement's first woman leader, was chairman and 85 countries took part.

Havana, Cuba, September 3–9, 1979. The Cuban president, Mr. Fidel Castro was chairman of the first non-aligned summit in Latin America. Ninety-four countries were represented as full members.

New Delhi, March 7–11, 1983. The summit of 101 members was chaired by the Prim Minister, Mrs. Indira Gandhi. Mrs. Gandh who was assassinated in October was succeeded as premier and non-aligned chairman by her son, Mr. Rajiv Gandhi.

Cyprus will be the next venue of the NA Foreigners Meeting in 1988, where the question of the NAM Chairmanship for the ninet Summit, scheduled for 1989, will be decide

WORLD POPULATION GALLOPING

The world population is expected to increase from the current 4.8 billion to 6.1 billion in the year 2000, Mr. Rafael Salas, executive director of the United Nations Fund for Population Activities (UNFPA), announced in June, 1986.

While there had been a decline in the population growth rate, what this meant in "absolute numbers" had yet to be realised.

The most significant development on the population front is that the annual growth rate of the world population has declined from a "all-time high" of 2.04 per cent in the 1960s t 1.67 per cent in the 1980s and "is projected t decline further to 1.5 per cent by the yea 2000".

World's Five Billionth Born

The world's five billionth citizen was born on July 7, 1986, according to demographers.

One-fourth of all the 20 billion born during all human history thus live now on earth, says the Washington Population Institute.

It is not known if the position of the five billionth citizen goes to a black, white or yellow. The child would expect health and joy, justice and love which are the rights of every child on earth, but far from all children on earth enjoy them so far.

Every fourth person on earth suffers from malnutrition. Fifteen million children die of hunger every year. Half of the citizen in developing countries have no access to sources of drinking water and are subject to dangerous diseases.

Over half the world population is deprived of medical aid. A huge number of able-bodied have no jobs even in developed capitalist countries. All this had a deleterious effect on the destinies of children.

Ninety per cent of the projected 1.3 billio increase in the population by the year 200 would occur in developing countries.

Until world population stabilises, probabl in the year 2100 at about 10.5 billion peopl population would remain a crucial glob issue.

The world population continues to grow a the rate of 156 persons per minute. Afric where population is about 550 million toda would have 860 million people by the yea 2000.

At the turn of the century, there would b about 70 cities with populations of four millio or more, topped by Mexico city with projected 26 million.

According to UN projections India woul double its current population during the ne 50 years and have more people than Chi has now, Bangladesh would have three time its population and Kenya five times i population, 50 years from now.

At present there are 76 million more birt than deaths on our planet each year. present rates continue, by the year 200 there will be 100 million more births tha deaths. A billion people have been added the last 13 years and the next billion will b added in 12 years.

Nearly all the growth will be in what a now the developing countries. By the time

By 2000 More Women Than Men

By the time world population stabilizes at the end of he next century here will be 175 million more women than men, according to the 1985 *State of the World Population Report by UNFPA*. The growing proportion of women will be the result of better health and safer childbirth.

Women may be biologically more resilient than men but so far they have been held back in many areas and unable to exercise their natural advantages.

Women at present represent 60 per cent of the world's illiterates and their numbers are growing more rapidly than those of men. Women are similarly held back in employment.

The UN now estimates that the average number of children a woman will bear in her lifetime will drop by 16 per cent between now and the end of the century when the figure will be close to three. But this is a global figure. There will be wide differences among the major regions.

* * * *

Cities will hold almost half the world's population by the end of the century, says *State of World Population Report 1986*.

Urban dwellers are already more than 40 per cent of the world population and will rapidly become a majority, says the Report: "Most of these urban dwellers live in developing countries, and an ever-higher proportion in the biggest cities.

The share of world population living in the largest cities will almost double between 1970 and 2025 because of the growth of very large cities in developing countries."

The Report says that most of the world's largest cities are now in developing countries. They are growing to sizes never before experienced. *Mexico City is already the world's largest, with 18.1 million people. By the end of the century it will have 26.3 million people, closely followed by Sao Paulo in Brazil with 24 million.* By then all but three of the world's 20 biggest cities will be in developing countries. *The biggest city in the developed world will be Tokyo with 17.1 million people.*

Urban growth can be a burden or a blessing, says the Report. Traditionally, the city has been seen as a "dynamo of social and economic development". But now, with the cities bulging at the seams with their own increase and new arrivals, drawing people from the productive countryside, some see them as "cardboard structures supporting an empty process incapable of self-sustaining industrialization."

The Report makes four suggestions. One: a minimum standard of social and economic wellbeing. Two: balancing urban policy with concern for rural well-being. Three: Policies of social improvement as contributions to lower fertility. Four: slower population growth which will make it much easier to attain these objectives.

Population Topping Resources

Outstripping of the world's resources as a population projected to reach 6,000 million people in 15 years is the focus of the state of the world 1986 report by the World Watch Institute.

The report states that per capita production has dropped since 1950 in 40 developing countries, home to more than 700 million people.

The decline in the per capita grain production in most countries is not exclusively due to ecological deterioration. Failed or non-existent population policies could expand demand for food and undermine agricultural support systems.

In essence, population growth hastens the process of ecological decline, states the report.

A quarter of the world's families live in makesshift shelters. Half of the third world's urban dwellers live in shanty towns which double in population every five to ten years.

A thousand million people lack safe drinking water and 2,000 million have no basic sanitary facilities.

According to the state of the world, 1986, two per cent of the world's tropical forests are destroyed each year.

Seven per cent of the earth's topsoil is lost each decade. The fish catch per person, including that from fish farming, is down by 15 per cent since 1970.

stabilization about 2095, 8.8 of the 10.2 billion will live in Africa, Asia or Latin America. South Asia and Africa alone will account for 60 per cent of the world's population.

Small Is the Rule. Even this gradual slowing down assumes that the world can maintain the present level of population programmes and policies and that families will be smaller as a result. Otherwise growth may continue and ultimate world population could be as high as 14.2 billion.

On the other hand, if small families quickly became the rule worldwide, population might peak at a level of 7.7 billion about the middle of the 21st century.

These are the latest *United Nations* projections and are based on the most recen information available. Data are much mor reliable than in earlier projections, sinc many countries have carried out accurat censuses recently. The figures show tha *women today are having fewer children tha their older counterparts did at the same age and that the average family in most develo pling countries is smaller than it used to be*

Impressive gains have been made durin the last decade in enabling people to exercise the basic right to plan their family's size *In India, the proportion of married wome aged 15 to 44 who practise family plannin has increased from 8 per cent to 23 per cent i a decade.* In Malaysia the rise has been fro 6 per cent to 36 per cent and in Thailan from 10 per cent to 39 per cent in the sam period. Mexico, a late-comer to populatio policies, has seen contraceptive use ris from 13 per cent to 40 per cent in only fiv years.

Problem Persists. But the populatio problem has by no means been solved:

- Although the rate of growth is fallin present growth rates are still higher than i 1950-55.
- There are still large gaps between th desire for smaller families and the reality. I Pakistan, for example, three-quarters o women in the child bearing age-groups hav knowledge of family planning but only a thir have access to the means; although near half of married women do not want to hav another child, only 6 per cent are takin practical steps to avoid it.
- Although families are becoming smalle women in developing countries still want have between three and five children. stable population requires an average of on two children for each woman.
- Annual additions to world population w increase for the rest of the century. This because the birth rate, although declining, calculated on an ever-increasing base. Th net addition to world population is estimate now at 78 million; by 2000 it will be 90 millio

Basic Needs. Even during the prese century we have not provided for the bas needs of nearly half of the world's populatio

obal recession and slow progress in de-
lopment plans have helped to increase the
mbers of the poor in both developed and
veloping countries. Population pressures
ll be more acutely felt as long as large-
ale poverty, malnutrition and illhealth per-
st. The people of the developing countries,
here living standards are lowest and
pulation growth highest, will be hardest
.

Resources and living conditions in their
rn help determine family size. Better health
rvices for mothers and children, lower
fant mortality, wider access to education, greater opportunities for women and reductions in disparities of income and wealth are all important in the move towards smaller families. Even in societies with generally low income, rural families are smaller when there is access to health and education.

Global development and prospects for global peace are intertwined. Each depends on an understanding of what is happening in population. Population stability beyond the year 2000 will be crucial to both development and peace.

Malthusian Theory. Some two cen-

Children of Africa

Africa's population growth rate of three per cent a year is the fastest in the world, a World Bank report on population growth and policies in Sub-Sahara Africa says.

Population growth, "a time bomb that threatens all progress in Africa," is one of the causes of the current African tragedy, claims *Famine A Man-Made Disaster*, a report from the Independent Commission on International Humanitarian Issues. But future disasters can be averted.

How? Through African resourcefulness, supported by aid from outside the region, which can break the current cycle of famine and death; human mistakes can be corrected by human ingenuity.

But there are formidable problems: in addition to inadequate food production, Africa is faced with increasing population and an urban migration.

Although in the eighteenth century, Africa contained 20 per cent of the world's population, by the year 2000 fewer than 13 per cent will live on the continent. Even so, Africa's high rates of growth will cause its population, over the next fifteen years, to increase more rapidly compared to most parts of the world

Several economic, social and cultural forces are keeping the fertility rates high The report explains that in Africa children still represent: more hands for the fields; security for old age; a symbol of potency; and, in some societies, a living link with the world.

turies ago (1789), the Rev. Thomas Malthus, then an unknown English curate, published a booklet–*Essay on Population*. In this book Malthus made the terrible prognosis that human population will soon outrun the means of subsistence (food supply). Ever since, the nations of the world have been keeping their fingers crossed, mutely watching the galloping population and wondering when the doom will fall. But things do not work out quite the way that Malthus predicted.

True, population kept mountign without a pause. In 1830—some fifty years after the Malthusian prognosis—human population reached one thousand million for the first time in history. In another century (1830-1930) it had doubled itself to 2000 million. In about a generation (1930-1960) a third thousand million was added. In a little more than a decade therafter, (1960-1974) the population increased by about 700 million.

But surprisingly, food production kept pace with population demolishing the Malthusian theory that population would increase in geomertical progression‡ while agricultural production would only increase in arithmetical progression.‡ Large scale mechanised farming was the first great step in agricultural expansion. Then came the Green Revolution and the techniques of intensive cultivation. The Malthusian ghost of food shortage was thus laid—apparently for ever.

For two decades ending in 1972, the world had in fact an oversupply of cereal grains and the main exporters were forced to cut down production drastically. In 1972 the tables were suddenly turned. Agricultural production slumped in many parts of the world, mainly on account of weather.

Severe shortages of food verging on famine plagued many countries. The pressure was so great that it was even suggested that advanced nations should cut down on meat in order to save more foodgrains for mankind.‡ The critical food situation remained unchanged through 1973 and continued well into 1974

Mexico Meet. It was at this time when the food horizon was overcast, that the UN summoned two World Conferences—one on Population at Bucharest in Aug. 1974 and the other on Food at Rome in Nov. 1974. The two Conferences worked out an overall assessment of world food production vis-a-vis population. What emerged from the assessment was that the world food production, including all items of food (foodgrains, tubers and other vegetables and meat, fish, milk and eggs) did not materially fall. The trouble lay in the alignment of production between the various countries of the world.

Advanced countries, by and large, remained surplus in food production. It was the developing countries that registered heavy shortages in vital articles of food. The consequence was that the advanced countries faced no problem– either of population or of food, whereas the developing countries faced it both ways—in population and in food supply.

Zero Growth Rate. It has been taken for granted that the advanced nations faced no population problem since they were steadily settling down to the zero growth rate in population. *Zero growth means that the population will keep steady through generations. In other words, births will be just enough to compensate deaths, never more.*

Our faith in zero growth rate was so intense that we had overlooked the other end of the problem, namely that births may be less than deaths and thus pull down the population to dangerous limits. The zero rate has dispelled the nightmare of Malthusian overpopulation. But it has at the same time turned up another nightmare—underpopulation—at least in Europe. The latest reports show that Europe is getting underpopulated.

While India and most of the world wrestle with the staggering problem of increasing numbers, much of Western Europe is preoccupied with the opposite problem. In fact there are economists in Europe who think that zero population growth is their biggest enemy.

Optimum Population. The ideal population is the optimum population. We speak of overpopulation when numbers exceed resources and of underpopulation when production falls short of numbers. If there is overpopulation there will not be ough goods to go round. If there is derpopulation there will not be enough nds to produce the necessary goods and rvices.

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‡Geometrical progression 1,2,4,8,16 etc

Arithmetical progression 1,2,3,4,5 etc.

‡The assumption is that cattle have to be fed 20 pounds of grain, for every pound of beef.

Some people think that we shall rather ve a shortage of goods than a surplus of en. The lesser evil, no doubt, but evil none e less. If we decide to get along with less goods and services, we shall have to choose a very low standard of life and opt for dissatisfaction all round. A society accustomed to supersonic transport, air-conditioned houses, piped water, electric gadgets, chic clothes and choice foods will soon find the going rough. It will not be long before 'death wish' overtakes all.

CHERNOBYL AND AFTER

World at large and the Soviet Union in particular, reeled under the tragic trauma of the world's worst industrial nuclear disaster caused by the 'melt-down' of a reactor at the Chernobyl Power Station near Kiev in the Ukraine last year.

Perhaps nothing has terrified humanity so uch since the first atomic blast over roshima in 1945 as the Chernobyl disaster.

The accident happened at 1.23 a.m. on pril 26. The water cooling system of one of e plant's four reactors failed, either leaking under pressure. The loss of water proiced immediate over-heating and the daner of melt-down.

Three or four hours later, the heat of the elt-down set ablaze the graphite blocks in e system which are used to maintain the iclear reaction at a manageable level. The azing reactor then started belching radio tive meterial into the atmosphere. By orning, the cloud of radio-active particles as sweeping out across Europe in a 1500 m diameter fan.

oviet Report. According to the 388 age Soviet report to the International Atoic Energy Agency, 31 persons died in the imediate aftermath of the explosion that read radio-active jet-stream up one mile to the atmosphere. 13500 persons were acuated from the area around the plant.

The report said radio-active elements from e reactor's fuel, which was released by the plosion and fire was dispersed by winds roughout the surrounding countryside.

Consequently, the food supply in the raine and Belorussia would be heavily ntaminated by radio-active isotopes of esium for a long time.

The report said direct exposure to the diation dispersed by the accident would use at least 5,300 cancer deaths over the ext 70 years. Another 5,000 non-lethal cancers will result from direct exposure.

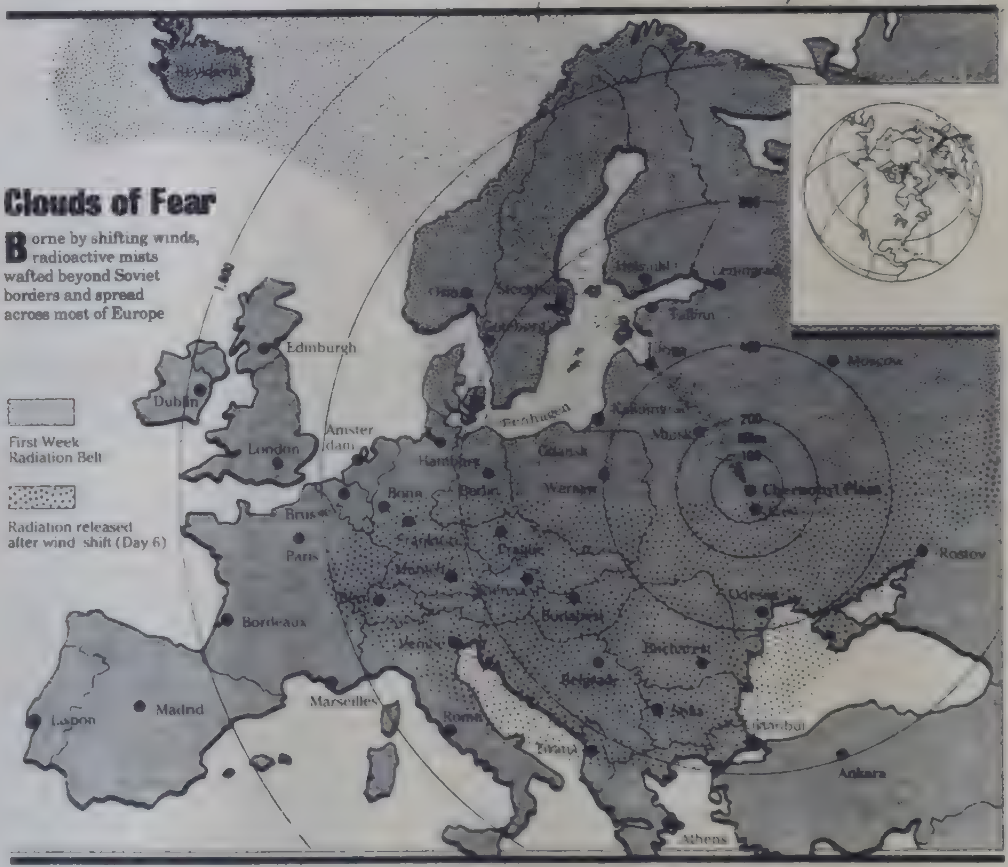
Clearly, food contamination is the biggest problem for the Soviet Union. Cesium, unlike most radio-active element's dispersed by the explosion, persists in the soil where it can readily be absorbed by plants. The problem is particularly serious because of the absence of humus or organic meterial in the soil near the reactor.

As a result cesium would enter the plants at a rate "10 times or even 100 times higher than in other types of soil" causing "stable and high levels of cesium-137 in food products in subsequent years".

Some Western observers think that eventually the death roll may soar to 40,000. But they also concede that the tragedy, horrendous as it is, has been greatly minimised beacuse of the evident Russian prowess in disaster management. Some 129 patients were flown to Moscow by the evening of the accident. Within 36 hours, nearly 1100 buses began to evacuate 135,000 persons from an area 18½ miles around the stricken station.

Altogether some, 5,000 doctors and nurses in 230 teams were drafted quickly into the Chernobyl region. Top soil from 1,000 square miles is being removed for burial as radioactive waste. How the fires caused by the blasts were put out and the "ball of radioactivity" finally sealed is another saga of human ingenuity against uprecedented odds.

As the deadly radio-activity swirled across Europe, angry protests across from the West European countries about Soviet Government's failure to warn them of the impendin



Clouds of Fear

Borne by shifting winds, radioactive mists wafted beyond Soviet borders and spread across most of Europe

First Week Radiation Belt
Radiation released after wind shift (Day 6)
Reykjavik
Edinburgh
Dublin
London
Amsterdam
Brus
Paris
Bordeaux
Lisbon
Madrid
Marseilles
Bonn
Hamburg
Berlin
Frankfurt
Munich
Prague
Vienna
Venice
Roma
Budapest
Belgrade
Bucharest
Sofia
Istanbul
Ankara
Athens
Tirana
Warsaw
Gdansk
Copenhagen
Oslo
Stockholm
Goteborg
Helsinki
Leningrad
Tallinn
Riga
Kaliningrad
Minsk
Moscow
Chernobyl Plant
Kiev
Odessa
Rostov
100
200
1,000

danger. East Germany, Czechoslovakia, Hungary, Poland and Romania took immediate protective measures. Austria issued warnings for pregnant women and small children. Sale of green vegetables was banned. The Greeks, the Swiss and the West Germans were all warned against milk and green vegetables. Farmers in Holland, Denmark and parts of Sweden were ordered to keep cows inside. The Scandinavian countries checked food imports from Eastern Europe. Twelve EEC countries decided to suspend imports from Eastern Europe of fresh food produced within 1000 kilometer radius of Chernobyl. Radio activity was reported in milk and vegetables sampled in some parts of Japan too.

As nations around the world checked radiation levels over their cities, a UN official raised the possibility of the world's first "radiation refuges". Anti-nuclear lobbies in West Germany, Sweden, Britain, Japan and other places demanded shutting down of nuclear power programmes once and for all

In an uprecedented show of sympathy an concern, the US, Japan, Britain and othe countries offered Soviet Union humanitaria and technicial assistance to deal with th problem. US reports said that Chernoby accident produced the fear that "it shoul happen hare". Out of 97 US nuclear facilitie 10 had safety problems.

Indian Reaction. In India also debat ensued on the safety of nuclear power plant The inbuilt safety measures provided in th nuclear power plants in India are "the bes comparable to any in the world" This was th reaction of Dr. Raja Ramanna, Chairman c India's Atomic Energy Commission.

"One of factors which compelled the At mic Energy Commission in this country not follow the Soviet system of not having double containment system was to mak reactor building completely safe from an hazards", he said.

idia has drawn up an ambitious programme setting up a network of fast breeder ıctors The existing Tarapore, Rajasthan d Kalpakkam reactors have an excellent ety record and the country has been ured repeatedly that the safety regula- ns are more stringent than even in the stern world.

ιEA Concern. The International omic Energy Agency in Vienna seized the itter immediately. Director General of EA Mr. Hans Blix visited Moscow along th two experts. The Agency, established in 57 to help promote the peaceful uses of clear energy, though has no policing nction, provides assistance on request.

At the IAEA's four-day meeting in Vienna July, about 500 scientists from 50 countries idied the official Soviet report. Attention is inevitably focussed on the inadequacy of fety features not only in Soviet Union, but o in other parts of the world. International -operation to minimise the damage caused nuclear accidents was saught.

But it was evident that no major nation will ve up building new atomic power stations e to the hazards involved, though some aller nations have already done so. De- ms of most reactors will be modified to sure greater safety despite the costs in- lved. The economics of nuclear power neration will thus change. Altogether, it came clear that Chernobyl will dampen e nuclear power race, but it will not end it.

arthquake Toll. In another major saster of the year, nearly 2000 people died an earthquake that hit the South American ite of EL Salvador on Friday, 10 October. e government declared a state of ergency and leftist guerillas battling the -backed administration of President Jose poleon Duarte declared a unilateral truce the country's 7-year old civil war.

About 250 major and minor tremors were gistered in two days. The capital city of San lvador with one million people was devas ed The worker district of Jacinto was literated The first quake measured 5 4 on e open ended Richter scale This was lowed by seven or eight tremors mea red between 4.5 and 4.9 on the same scale. The quake was on a similar scale to the one felt in EL Salvador in May, 1963 when hundreds of people died. The worst recent quakes in Central America were on December 14, 1972 in Managua, Nicaragua, when

Nuclear Accident Record

1. October 7, 1957: Sellafield, England. Fire in reactor spread radiation throughout Cumbria. At least 39 known to have died of cancer.

2. 1957: Kasli, the Urals, Soviet Union. Explosion in tanks containing waste from nuclear weapons. Casualties not disclosed.

3. January 3, 1961: Idaho Falls, Idaho, United States. Reactor went out of control. Three killed.

4. October 5, 1966: Detroit, United States. Reactor core meltdown after malfunction. No known injuries.

5. January 21, 1969: Lucens Vad, Switzerland. Reactor malfunction and heavy leak into a cavern. No known injuries.

6. October 17, 1969: Saint-Laurent, France. Partial meltdown of reactor. No known injuries.

7. 1974: Shevchenko, Soviet Union. Reactor explosion. No details.

8. March 22, 1975: Decatur, Alabama, United States. Fire burned reactor controls. No injuries.

9. March 28, 1979: Three Mile Island, Pennsylvania, United States. Reactor fuel meltdown. Reactor still being docontaminated.

10 August 7, 1979: Erwin, Tennessee, United States. Reactor malfunction and uranium leak. About 1,000 contaminated.

11. April 25, 1981: Tsuruga, Japan. Reactor malfunction. 45 contaminated.

12. September 23, 1983: Constituyentes, Argentina. Reactor accident. 1 killed.

13. January 6, 1986: Gore, Oklahoma, United States. Nuclear cylinder burst at plant. 1 killed, 100 injured.

14 April 26, 1986: Chernobyl, Soviet Union. 31 killed.

10,000 people were killed and on February 4, 1976 in Guatemala when more than 20,000 died.

Tragedy in Cameroon. In the West African state of Cameroon, more than 1750 people were killed by toxic gas fumes spewing from volcanic lake in the north-west region. The tragedy took place on Lake Nios near Nigerian border, 325 Km north west of the capital, Yaounde on August 21, 1986.

World's Worst Quakes

The massive earthquake measuring 8.1 on the Richter Scale which shook Mexico on Sept. 19, 1985 may join the worst such catastrophes of this century, after those that shook San Francisco, California in 1906, northern Peru in 1970, and Nicaragua in 1972.

It was the second major earthquake to hit Mexico in 12 years.

Following are the world's worst earthquakes since 1970.

- *May 31, 1970, a 7.7 degree earthquake killed 60,000 people in Peru.*
- *December 23, 1972, between 6,000 and 12,000 dead and 20,000 unaccounted for in Nicaragua after an 8-degree quake in the country's capital Managua.*
- *May 11, 1974, 20,000 dead in southwest China in a 7-degree quake.*
- *February 4, 1974, 23,000 dead in a 7.3 degree quake in Guatemale.*
- *July 26, 1976, 700,000 to 800,000 dead in the Beijing region, according to Chinese sources, in a quake reaching 7.3 to 8.2 degrees.*
- *November 24, 1976, 3,000 dead in Turkey, after a 7.6 degree quake.*
- *August 19, 1977, 190 dead in Indonesia, 7.7 degrees.*
- *November 23, 1980, three 7 degree quakes killed 2,800 people in southern Italy.*
- *May 26, 1983, the strongest quake in Japan in 44 years, 7.7 degrees, killed 101 people.*
- *March 3, 1985, a 7 to 9 degree quake killed 177 people in Chile.*
- *August 24, 1985, a 7.4 degree quake killed 60 people in China.*

Deep under Lake Nios, the earth belched A bubble of scalding gas rose through the clear blue waters, collecting clay silt and burst through the surface into a raining windy night. Death came with an acrid odour.

Termed as "a geological catastrophy", the volcanic fumes were identified by government experts as hydrogen sulphide, a colourless, flammable, poisonous gas. Seismic activity was thought to have triggered the fumes from the lake. The fumes enveloped a village and contaminated a ten-Km radius around Lake Nios.

Bloodiest Plane Hold-up. On September 5, 1986, four armed desperado seized a Pan Am jetliner at Karachi and sho 20 of the 400 passengers when Pakistan commandos stormed the aircraft. In the bloodiest ever plane holdup in the sub-continent, 15 of the killed were Indians. It ha also been the most glaring instance c security lapse at an airport where the desperados could storm their way to the targeted plane with a huge quantity of arms an explosive materials.

Of the 15 cases of highjacking in th sub-continent since January, 1971, only tw have been known for loss of life. In 1981, th hijackers of a Pakistani airliner shot dead on passenger. In August, 1982, one lone terrorist, Museebat Singh, who tried to hijack a Indian Airline's plane to Lahore was sho dead at Amritsar airport by commandos.

In another aviation disaster last year, a Aero-Mexico DC-9 airliner and a privat plane collided and crashed in balls of fir into houses in Los Angels, killing as many a 77 people on September 1. The pilot of th small plane was said to have suffered hea attack on flight.

Ships collide. Nearly four hundre people were killed on September 2 whe two ships collided during night in the Blac Sea. Soviet liner 'Admiral Nakhimov' whic collided with the freighter 'Pyotr Vasyev' an sank had 1234 persons on board. Of ther 836 were saved.

Passengers, all tourists, dancing to th music on a band on the deck of 'Admir Nakhimov' were the first to notice the bu carrier on a collision course. The passeng

What is Radio activity?

radioactive atom is one that ight at any moment, turn to something else, emiting gamma ray (or a subatomic article in the process. One amma ray emitted per econd is one *becquerel* Antoine Henri Becquerel, 352, 1908 discovered adioactivity).

For students of radioactive xchange rates (1m bec-uerels buy one *rutherford* Ernest Rutherford, 1871-937, split the atom) and 37 illion becquerels buy one *urie* (Marie Curie, 1867-934, discovered radium). adioactive iodine 2,000 bec-uerels per litre of milk is onsidered dangerous to rink.

Gamma rays are danger-us because they can create lectrical charges that dam-ge body tissue and cause utations in genes, some of hich might be cancerous. or radiation sickness, lots of amma rays are needed. But, s far as any body knows, any ne single ray can cause ancer and the more rays at go through your body, e more chance there is of ne doing damage. Howev-r, the probability of one oing so is tiny.

There is always natural adioactivity in the environ-ent. It is not harmless, but either is it avoidable. Every ock, every plant, every breath of air has some radioactive atoms in it. Some bits are worse than others–Cornish granite is among the worst–and this natural background probably does cause a few of the millions of cancers.

After a nuclear fallout if you drink milk, you ingest some of the radioactive atoms a cow has collected from a wide area of grass.

So a measure of dose is needed. One *roentgen* (Wilhelm Konrad Rontgen. 1845-1923, discovered x-rays) is the amount of radiation that produces 0.258 *coulombs* (Charles Augustin de Coulomb, 1736-1806, discovered the law governing electrical forces) of electric charge in one kilogram of dry air. In much the same way, *rads* and *grays* (L.H. Gray, 1905-1965, one gray is 100 rads) measure the dose received by any substance in *joules* (James Prescott Joule, 1818-89) per kilogram.

Different kinds of radiation have different effects on biological tissue according to their penetration power as well as their energy. So the scientists invented the *rem*, which stands for roentgen-equivalent-man. One rem produces the same biological effect as one roentgen of x-rays or 8 billion becquerels per kilogram.

Just to straighten things out, they are now trying to abolish the rem in favour of a new measure called the *sievert* (Rolf Maximillian Sievert, 1896-1966, who measured a lot of radio-activity in his time), one sievert equalling 100 rems.

It is rems and sieverts that matter, because they measure, not the level of radioactivity, but the accumulated dose. Most people receive about 0.2 of a rem (two-thousands of sievert) in a year, which probably has about the same effect on their cancer risk as smoking a cigarette every ten days. At the other extreme, 1,000 rems (ten sieverts) received within a few minutes would certainly kill you

p was ripped open. The hole was enor-ous. The ship began to tilt and sank to a pth of 43 metres.

The rescue operation was hampered by h waves whipped up by sudden gusts of wind However. divers were able to save hundreds of passengers, but many were trapped in the sunken ship.

(Challenger Tragedy: See Space Exploration)

A VIEW FROM REYKJAVIK

Is humanity nearer to a better world to live in? After the Reykjavik meeting of the two superpower leaders within a year of the Geneva Summit, and the Stockholm accord on arms limitation last September, it is not all lost for the new generation.

In an unprecedented spirit of give-and-take during their two days of intensive talks in the capital of Iceland in October last, the U.S. and the Soviet Union came very close to a breakthrough on controlling their awesome nuclear stockpiles, ushering in a world free of atomic weapons in 10 years; but, as quickly as they came near; they broke off on the issue of the Strategic Defence Initiative or the Star Wars of the U.S.

Disappointment, and even a sense of frustration, marked the bleak outcome of the superpower efforts to achieve some movement on issues that have divided them.

The Soviet leader, Mr. Mikhail Gorbachav lashed out at the U.S. for harbouring "imperialist" visions of controlling the world and for becoming "nostalgic" about the days when it was strong and the Soviet Union was weak. He said times had now changed. He charged the U.S. with coming "empty handed" to Reykjavik and warned that its adherence to 'SDI' might unleash a new arms race.

Mr. Gorbachev, reiterating the Soviet Union's opposition to the SDI programme said: "The world was approaching a point of no return. Talks with the U.S. is now practically at a standstill."

Geneva Talks. Negotiations at Geneva, he said, had been running "idle" lately. "All of us are reaching a point of no return, at which a new stage of arms race might begin with unpredictable, military and political consequences, he said.

The U.S. President, Mr. Ronald Reagan said that while both sides favoured reduction of nuclear missiles and warheads, the Soviets insisted on an agreement that would deny to him and future U.S. Presidents, for 10 years, the right to develop, test and deploy a defence mechanism against nuclear missiles
"for the people of the free world". "This w
could not and will not do," he said. The Sovi
proposal, he said, would have "killed" th
defensive shield which the U.S. wanted t
develop.

As both the leaders departed from Reyk
javik after their unsuccessful discussion
doubts persisted in several areas. Neithe
side was sure if there would be anothe
summit meeting soon or whether the usu
Geneva arms control discussions would re
sume.

It was agreed at the Geneva summit
1985 that Mr. Gorbachev would visit the U.
and Mr. Reagan would go to Moscow in 198
According to the Soviets, Mr. Gorbachev
Washington visit might not materialise.

According to Mr. Shultz, during the la
two days at Reykjavik, "extremely importa
potential agreements" were reched to r
duce strategic arms stockpiles by half ar
also to deal effectively with intermedia
range missiles in Europe. Although the tw
sides did not come to grip with the morato
ium on nuclear testing, there were indic
tions that they could work out a satisfacto
arrangement. Also, there was an impressio
on either side that regional problems ar
human rights questions could be addresse
in a satisfactory manner.

ABM Treaty. Differences over t
Anti-Ballistic Missile treaty too proved
stumbling block. Mr. Shultz said the Sovie
wanted to change the treaty in a way th
"would confine research, and testing a
development to the laboratory." If the tre
was changed in the manner desired by t
Soviet Union, the U.S. would not be able
end up with an effective programme.

However, while Reagan and Gorbach
did not clinch any agreements during th

ABC OF WAR AND PEACE

Here is a list of the most essential acronyms for a student of War and Peace:

ALCM: Air-Launched Cruise Missile.
ABM: Anti Ballistic Missile.
ASAT: Anti Satellite Satellite.
EMD: Ballistic Missile Defense.
C3: Command, Control and Communication.
CD: Conference on Disarmament.
CIA: Central Intelligence Agency.
COPUOS: Committee on the Peaceful Uses of Outer Space.
DOD: Department of Defence.
ELP: Extremely Low Frequency.
EAM: Emergency Action Message.
EMP: Electro-Magnetic Pulse.
GPS: Global Positioning System.
ICBM: Inter-Continental Ballistic Missile
IKON: Improved Key hole photo reconnaissance.
IMEWS: Integrated Missile Early Warning Satellite.
INF: Intermediate range Nuclear Force
IONDS: Integrated Operational Nuclear Detection System.
MAD: Mututal Assured Destruction.
MBFR: Mutual and Balanced Force Reduction.
NAVSTAR: Navigational Satellite
NORAD: North American Aerospace Defence Command.
NASA: National Aeronautics and Space Administration.
NSA: National Security Agency
RORSAT: Radar Ocean Reconnaissance Satellite
SAC: Strategic Air Command
SAR: Synthetic Aperture Radar
SIGINT: Signals Intelligence
SONAR: Sound Navigation And Ranging
START: Strategic arms control negotiations
SLBM: Submarine Launched Ballistic Missiles
SLCM: Sea-Launched Gruise Missiles
TACAMO: Take charge And Move Over
VLF: Very Low Frequency

meeting, the proposals they put on the negotiating table remain breath taking in their sweep and magnitude.

The U.S. President offered to abandon some of his deadliest nuclear missiles, trusting his Soviet counterpart to do the same. The latter not only reciprocated but suggested a freeze on others. Issues which had stalemated talks for years were either just resolved or passed over.

The U.S. and the Soviet Union agreed to the phased but total elimination of offensive ballistic missiles by 1996.

Elimination. The two countries which spent decades working on the numbers and strength of intermediate missiles, agreed to their elimination from Europe and a global ceiling of 100 warheads each in Asia and the U.S. the Soviet Union further agreed to a freeze on all its short-range missiles for the time being.

Methods for verification, earlier described as a major stumbling block to arms control, and the ratification of major treaties were outlined at Reykjavik, with both superpowers agreeing to actual on site inspection of each other's inventories and production facilities.

The offers made at Reykjavik have now become a fresh starting point for arms control discussions at Geneva. These discussions which decades ago began with talks of strategic arms limitations and then floundered over issues of reduction are now going to focus on total elimination. That is a giant step forward.

Stockholm Accord. Not since the SALT-II agreement in 1979, have the NATO and Warsaw Pact powers achieved a major breakthrough in arms limitation, as they have done last September with the approval of European security agreement in Stockholm.

The document, approved by the 35-nation European Security Conference in Stockholm,
will allow the East and West to moni
continuously and inspect all but the m
minor troops movements — less than 3,000
from the Atlantic to the Urals in the Sov
Union, and according to the participan
"will make Europe a much safer place"

The European security talks, wh
opened in January 1984, were born out of
1975 Helsinki Accords, which introduce
limite and voluntary regime of military
spections for manoeuvres involving m
than 25,000 men. The 35 nations include
U.S., Canada and all European nations w
the exception of Albania.

Major Concession. For the first ti
in arms control talks the Soviet Union
allowing on-site challenge inspection with
claiming it to be an attempt to spy on
Warsaw Pact. Western observers interp
this as a major Soviet concession.

It is also a major breakthrough for
Western efforts to convince the Warsaw P
that on-site inspection is the key to verifi
tion and credible compliance in any fut
arms control agreement.

The operational clauses of the agreem
commit the 35 countries to give an ann
calender of their military movements inv
ing between 13,000 and 72,000 troops. C
year's warning has to be given for mo
ments involving between 40,000 and 72,
troops. Armies above that figure cannot
moved at all.

The agreement also stipulates a 42-
notice for all ground-based exercises inv
ing more than 13,000 men and 300 ta
Observers must be invited to all moveme
involving more than 17,000 men.

At best, the Stockholm agreement i
solid confidence-building exercise. If it
lead to a similar agreement on nuclear an
then posterity may conclude that this gene
tion of leaders, for their first time in
history of mankind, succeeded in eliminat
war as a political opinion.

SPECIAL FEATURE

INDIA AND SAARC: NO BED OF ROSES

SAARC—the world's newst regional organisation, is badly in need of unity in diversity. India with her super-size and economic capabilities should always be prepared to absorb the shocks to become a successful leader of the region.

A student of contemporary South Asian litics is confronted with a stark reality hile on the one hand, the countries of the gion have been slowly edging forward in gional co-operation, there had also been, the same time, widening of regional rategic cleavages It would be oversimplis to maintain that one is the consequence of other or vice versa On the contrary, it could be argued that without some form of regional co-operation, the strategic environment would have deteriorated still further.

The launching of the South Asian Association for Regional Co-operation or to use its popular acronym SAARC, following the Dhaka summit in early December 1985 was the slow steady and welcome culmination of the steps initiated by President Ziaur Rahman of

Bangladesh as early as 1977. The formal process began with the meeting of the Foreign Secretaries of the seven countries in Colombo in April 1981 and continued with three similar meetings in Kathmandu, Islamabad and Dhaka.

The idea got a push forward in the meeting of the Foreign Ministers in New Delhi in August 1983, which accepted the concept of regional co-operation for collective self reliance through economic growth, social progress and cultural development. Nine areas were identified for regional co-operation, namely, agriculture, rural development, tele-communications, meteorology, health and population, postal service, transport service, science and technology and sports, arts and culture. Following the meeting of the Foreign Ministers in Thimpu in May 1985, the summit meeting of the Heads of States was held in Dhaka in December 1985 and the SAARC was launched amidst much euphoria and fanfare.

Political Will. The very fact that the second summit was held in Bangalore in the middle of November 1986 — despite the worsening of the political climate in the region as a result of Islamabad's involvement in terrorism in Punjab, Pakistan's nuclear ambitions and the induction of AIWACS into Pakistan — underlines the political will of South Asian countries to continue to strive for regional co-operation.

Was the euphoria and goodwill, which was pervasive and endemic during the Dhaka and Bangalore summits, justified in the light of the past experience? Will SAARC, now under India's chairmanship, fulfill its cherished objectives and translate the dreams of one fifth of humanity, who inhabit this region, to lead a life of dignity and self respect, with a decent standard of living, in an atmosphere of regional stability and security? What had been the formidable obstacles in the way of regional co-operation in South Asia? What is the way ahead after the Bangalore Summit?

While it is undeniably true that South Asia had been a late comer in the sphere of regional co-operaton, four plus points must be highlighted in its favour at the very outset. SAARC represents the whole of South Asia; which is in sharp contrast to the Association of Southeast Asian Nations (ASEAN). ASEAN represents only a fragment of Southeast Asia; Burma and Indo-Chinese countries — Vietnam, Laos and Kampuchea — are out of it.

Secondly, SAARC is the spontaneous result of the urges and aspirations of the ruling elites of South Asian countries, whereas ASEAN was the culmination of US attempts to form a regional organisation of pro-western states in the wake of the escalation of Vietnam war in the late 1960's.

Thirdly, despite the wide differences in the foreign policies of South Asian states, the international relations in the region is not one of polarisation; on the other hand, in Southeast Asia, the last few years have witnessed the politics of confrontation between ASEAN and Indo-Chinese states.

Lastly, it took ten years for ASEAN, which is generally projected as the model of regional co-operation by Western writers, to hold its first summit of Heads of States, whereas SAARC held its first summit within five years of the acceptance of the idea of regional co-operation.

Positive Advantage. Despite these positive advantages, why is it that SAARC has yet to move out of the take off stage? If one works out a balance sheet of success and failure of regional co-operation in other parts of the world-European Economic Community, Gulf Co-operation Council and ASEAN, to name three of them — there are certain factors which have contributed to their consolidation and successful functioning. As an Indian scholar, Dr. Mohammed Ayoob remarks, there is growing identity of approach and convergence of interests in four critical areas.

These four are 1) Similarity of threat perceptions, both internal and external, which leads to not only identity of threat perceptions, but also to security co-operation in critical areas; 2) Identical political systems which lead to common political/ideological perceptions; 3) Common foreign policy stance on crucial global issues which provide for a convergence in strategic perception and 4) An unwritten understanding on the role of the pivotal power-Indonesia in the case of ASEAN — which provides internal cohesion and lessening of intra-state tensions in the region. All these factors, in varying degrees, paved the way for the success of EEC, GCC and ASEAN.

In South Asia, the situation is entirely fferent. Whether it is the nature of political stem, perceptions of internal or external curity threats, foreign policy orientation or e role of the dominant power-India in this se — there are wide differences of opinion nong the member countries.

. Colossus. The most striking feature the South Asian scene in the pre-eminent sition of India, which bestrides the region most like a colossus. The largest and the ost populous, it has all the potentials of merging as one of the world's major powers the turn of the century. In terms of area d demographic and economic resources, dia is bigger than all the other countries t together.

What is equally interesting is the fact that dia is at the very centre and all other ountries are bordering on its periphery. dia's neighbours among themselves have ery few common attributes and their rela- ons with each other — both economic and olitical — are very minimal. The crux of eir diplomacy is how to gain maximum verage vis-a-vis India, the central power in e region.

The common cultural heritage — Indic vilization to use Prof. Arnold Toynbee's hrase — shared legacy of British colonial omination and identical problems of social d economic backwardness point to the derlying unity of South Asia; at the same ne, to quote Mrs. Indira Gandhi "each ountry has its individual personality, distinc- ve perception and a different political stem". The religious, linguistic and ethnic onds which cut across national boundaries ave given rise to complex problems of ational integration and search for national entity.

While each country is trying to evolve its wn majority-minority syndrome, it is also ying to maintain its psychological distance om India. Given the asymetrical power ructure in the region, it is but natural for dia's smaller neighbours to be apprehen- ve of a possible domination by India.

As a Sri Lankan scholar, Dr. Shelton odikara, points out regional co-operation ust not lead to a "one way process" and ould not lead to "dominance — dependen- relations". On the other hand, New Delhi els that its smaller neighbours are deliber- ely involving the external powers in the region in order to reduce India's natural pre-eminence and cut her to size. This objective becomes evident, if one analyses the background and motivations of political initiatives undertaken by India's smaller neighbours at regular intervals — Pakistan's quest for parity with India, its proposal for a nuclear free South Asia zone, Nepal's zone of peace proposal and Colombo's suggestion for a nuclear weapon free Indian ocean.

It is also interesting to note that while India and Soviet Union have forged abiding friendship on the basis of convergence of interests, especially in South Asia, Moscow is viewed with suspicion by most of South Asian capitals.

Stability and Security. Stability and security are intimately interwined with the nature political systems prevailing in South Asian countries. While almost all countries started their political process with democratic forms of government, gradually democracy was derailed, and except India and Sri Lanka, all other countries came under varying forms of authoritarianism. Democracy, even in the island republic of Sri Lanka, is subjected to severe stresses and strains as a result of intensification of ethnic conflict during recent years.

India's democracy and federal form of government — despite serious distortions and disabilities — are perceived as a threat and source of destabilisation by the authoritarian ruling elites of South Asia; what is more, Indian interference becomes a convenient red herring, whenever the rulers are faced with popular demands of democratisation and deteriorating internal situation.

It is equally interesting to highlight the fact, that while Indian national leadership — thanks to the genius of Mahatma Gandhi and Jawaharlal Nehru — deliberately discarded the religion of the majority community as the basis of nationhood and preferred to pursue a policy of cultural pluralism by introducing federal form of government, in many countries, religious fanaticism and denial of minority rights have increasingly come to the fore. Here again, the forces of secularism and democratisation look to India as a model, whereas, more often than not, suppression of democratic rights is parallelled with accusations of Indian interference.

Bilateral Problems. Another consequence flows out of the Indo-centric character of South Asia. Most of the contentious issues which vitiate the political atmosphere are and would continue to be bilateral. Issues relating to demarcation of boundaries, the Kashmir question, problems relating to people of Indian origin in Sri Lanka, presence of Sri Lankan Tamil militants in India, refugees from Bangladesh and Sri Lanka — all these are bilateral. What is more, deterioration in bilateral relations casts a shadow over regional co-operation as was evident from Colombo's decision to boycott SAARC meeting in Thimpu last year. To the relief of all, Sri Lanka relented and finally attended the meeting. The lesson is clear — without improvement in India's relations with its neighbours, regional co-operation in South Asia cannot make such headway.

Given the above mentioned political realities in South Asia, it must be underlined that there is a certain co-relation between India and domestic developments in South Asian countries. In the same way, these countries can also influence the political developments within India. Thus, there is a nexus between Bangladesh and Assam, Sri Lanka and Tamil Nadu, Pakistan and Kashmir, Pakistan and Punjab and Nepal and contiguous Indian states.

An acceptance of this stark reality and working out a meaningful interaction on that basis can alone lead to healthy inter-state relations in South Asia. Certain illustrations can be cited to prove this point. In the early 1950's, India's assistance was sought and readily given to save the monarchy in Nepal from the attempted coup of Ranas. During the political crisis in Sri Lanka in the early 1970's, as a result of JVP insurrection, Mrs. Bandaranaike sought external assistance including India, which was spontaneously given.

It is also possible to argue that if Yahya Khan and Pakistani leadership were most appreciative of East Bengali aspirations and worked in conjunction with India, the history of Pakistan might have been different. Similarly Indian's efforts to bridge the gap between Colombo and Tamil groups and the disarming of the Tamil militants in early November 1986 are examples of how two South Asian countries can meaningfully co-operate to find solutions to some of the complex problems facing the region.

Misgivings. One can understand and appreciate the fears and misgivings that a small country entertains towards its big neighbour. Unfortunately, the South Asian countries try to involve external powers or become vulnerable to super power manipulation in their desire to offset India's so called hegemonistic designs. No country in South Asia by itself is a security threat to India, but as a result of external involvement India's strategic environment is becoming increasingly critical, which is a matter of serious concern to New Delhi.

In this connection, the South Asian countries, must draw lesson from the experience of super powers. Though their defence production and military capabilities have increased manifold, their political clou around the world has steadily declined. The heroic struggle of Vietnam against the Unitec States and Soviet inability to put down Afghan resistance are clear pointers of super power inability to stem the tide of nationalism in Asia. Regional co-operation can succeed only if it is based on mutual trust, reciprocity and realism.

The Bangalore summit decided to consolidate the gains made in Dhaka and enlarge the areas of interaction. It was decided to se up a permanent secretariat in Kathmandu to monitor and coordinate the implementation of programmes. The summit also identified further areas of co-operation which include Radio and Television programmes, tourism exchange of scholars, a regional documentation centre and an organised volunteer exchange programme for work in agriculture and forestry extension. The summit also felt the necessity to combat the twin evils of drug trafficking and terrorism, but the member states could not arrive at any unanimous decision on these two vital matters.

Careful Nurturing. The seeds sown in Dhaka and Bangalore will require careful nurturing if regional co-operation is to make headway in South Asia. Initiatives must be immediately undertaken to give more flesh and blood and greater momentum to regional co-operation. At the present stage, regional co-operation is still being viewed as an extension of the foreign policy of each country. ☐

PART THREE

INDIA AND STATES

INDIA: BASIC FACTS

Capital : New Delhi
Area : 3287263 Sq. Km.
Population (1981) : 685184692
Population (1986) : 76200000
Density of population (1981) : 216 sq. km.
Literacy : 36.2%
,, Male : 24.8%
,, Female : 46.9%
Female-Male ratio : 934 female for 1000 male
Rural population : 76.7%
Urban population : 23.3%
Birth rate (for thousand) : 33.6%
Death rate (for thousand) : 11.9%
Child mortality for thousand births : 114
Average life Expectancy (1981) : 54
National income (1984-85) : Rs. 57014 crore (1970-71 price level)
Annual Per Capita Income (Average) 1984-85 : Rs. 2344
States : 23
(Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Madhya Pradesh, Orissa, Bihar, Uttar Pradesh, Rajasthan, Gujarat, West Bengal, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir)
Union Territories : 8
(Andaman & Nicobar Islands, Arunachal Pradesh, Chandigarh, Dadra Nagerhaveli, Delhi, Goa, Daman, Diu, Lakshwadeep, Pondicherry)

THE COUNTRY

India occupies a strategic position in Asia, looking across the sea to Arabia and Africa on the West and to Burma, Malaysia and the Indonesian Archipelago on the East. Geographically, the Himalayan ranges had kept India apart from the rest of Asia.

The fertility of the Indo-Gangetic belt, however, had proved to be such an irresistible magnet that hordes of people had pressed into India through the mountain passes from immemorial times.

Position. India lies to the north of the equator between 8° 4′ and 37° 6′ north latitude and 68° 7′ and 97° 25′ east longitude. It is bounded on the south west by the Arabian Sea and on the south east by the Bay of Bengal. On the north, north east and north west lie the Himalayan ranges. The southern tip, Cape Comorin (Kanyakumari), is washed by the Indian Ocean.

India measures 3214 km from the north to south and 2933 km from east to west with the total land area of 3,287,263 sq.km. It has a land frontier of 15200 km and a coastline of 7516.5 km. Andaman and Nicobar islands in the Bay of Bengal and Lakshadweep (islands) in the Arabian Sea are parts of the territory of India.

India shares its political borders with Pakistan on the west and Bangladesh and Burma on the east The northern boundary is made up of the Sinkiang province of China, Tibet, Nepal and Bhutan.

Physiography. India has seven major physiographic regions: (1) Northern Mountains including the Himalayas and the mountain ranges in the north-east. (2) The

Indo-Gangetic plain, (3) Central Highlands, (4) Peninsular plateau, (5) East Coast, (6) West Coast, (7) Bordering seas and islands.

All the major land forms, hills, mountains, plateaus and plains, are well represented in India. Much of the land suface of India has developed a plateau character. There are extensive plains either flat or rolling at levels ranging from 300 to 900 meters, dotted with conical or rounded hills or traversed by flat-topped ridges. These are mostly in the central highlands and the peninsular plateau of the Deccan.

The alluvial plains, however, have been the most important land area in India, historically. In the Indo-Gangetic belt, level lands thick with lush vegetation stretch for miles and miles. These plains have lured successive streams of invaders into India—the Aryans, Scythians, Huns, Pathans and Mongols. They have fostered the growth of great empires like those of the Mauryas, the Guptas and the Mughals.

Mountain System. India has seven principal mountain ranges: (1) the Himalayas, (2) the Patkai and other ranges bordering India in the north and north east, (3) the Vindhyas, (4) the Satpura, (5) the

India from the Indus

India derived its name from the river Indus, which flowed through north-west India–now north-west India and Pakistan. The first Aryan settlers in India called the river Indus, the Sindhu, meaning a huge sheet of water.

The Indus is a mighty river. With its five tributaries draining the Western Himalayas from Kailas to Kashmir, the Indus carries an annual flow, twice that of the Nile and three times that of the twin giants, Euphrates and Tigris combined. The Aryans in their long trek through Iran into India could never before have encountered a river of such magnitude as the Indus. That was probably why they called it the Sindhu.

In 518 B.C. Darius, the Persian Emperor, conquered the country around the Indus and converted it into a Persian satrapy. The Persians, who found it difficult to pronounce an initial 'S', turned Sindhu *into* Hindu. *Passing through the hands of the Greeks,* Hindu *became* Indus. *India was the country of the* Indus *With the Muslim invasions, the old Persian name returned in the form of* Hindustan *and the people who inhabited the land, came to be called* Hindus.

The name 'India' thus harks back to the ancient Indus civilization, though no one had heard of such a civilization till the 1920s. However, in the latter half of the twenties, two ancient sites in the Indus Valley—Harappa and Mohenjo-daro—*were excavated. These cities brought to light a civilization, which was at first called the Indus Valley Civilization or for short, the Indus Civilization but was specifically described later as the Harappan Civilization.*

The discovery of this civilization posed a historical puzzle. Itt had appeared on the stage of history, full grown and fully equipped, like Athene from the head of Zeus and just as suddenly. All civilizations known to history have started from small beginnings and have taken hundreds of years to reach their prime. The Harappan civilization showed no signs of such birth and growth.

This puzzle was solved only recently with the discoveries at Mehrgarh, *Baluchistan, in 1973-80. The settlements at Mehrgarh, in the western valley of the Indus, were built more than 3,000 years before Mohenjo-daro and Harappa, which are situated in the eastern Indus valley. According to two researchers of Mehrgarh,* Jean Francoise Jarrige *and* Richard H. Meadow, *Mehrgarh provides an archaeological record with a long sequence of occupations.*

Aravalli, which separates the Indo-Gangetic plain from the Deccan Plateau, (6) the Sahyadri, which covers the eastern fringe of the West Coast plains and (7) the Eastern Ghats, irregularly scattered on the East Coast of India and forming the boundary of the East Coast plains.

Himalayas, the highest mountain-system in the world, is also one of the world's youngest mountain ranges. It extends practically uninterrupted for a distance of some 2500 km and covers an area of about 500,000 sq. km. It contains the world's highest mountain peak, *Everest* and some ten peaks rising above 7,500 m. It appears to have risen from the bottom of the sea as a result of a collision between the drifting Indian (peninsular) plate and the Tibetan block of South Asia about 50 million years ago. The Himalayas reached their present heights much later.

Patkai and allied mountain ranges run along the Indo-Bangladesh-Burma border and may collectively be called *Purvachal* or eastern mountains. These ranges forming an arc must have come into existence along with the Himalaya.

Aravalli range in north-western India is one of the oldest mountain systems in the world. The present Aravalli range is only a remnant of the gigantic system that existed in prehistoric times with several of its summits rising above the snow line and nourishing glaciers of stupendous magnitude which in turn fed many great rivers.

Vindhyan range traverses nearly the whole width of Peninsular India—a distance of about 1050 km with an average elevation of some 300 meters. The Vindhyan range appears to have been formed by the weathered products of the ancient Aravalli ranges.

Satpura range, another ancient mountain system, extends for a distance of 900 km with many of its peaks rising above 1000 meters. It is triangular in shape, with its apex at Ratnapuri and two sides running parallel to the Narmada and Tapti rivers.

Sahyadri, or Western Ghats, with an average height of 1200 metres, is about 1600 km long and runs along the western border of the Deccan Plateau, from the mouth of the river Tapti to Cape Comorin (Kanyakumari), the southernmost point of India. It overlooks the Arabian Sea, and catches the full force of the monsoon winds, thus precipitating heavy rains on the West Coast.

Eastern Ghats, bordering the East Coast of India, is cut up by the powerful rivers into discontinuous blocks of mountains. In its northern parts between the Godavari and Mahanadi rivers it rises to above 1000 meters.

River System. There are three main watersheds in India. (1) Himalayan range with its Karakoram branch in the north, (2) Vindhyan and Satpura ranges in Central India and (3) Sahyadri or Western Ghats on the West Coast. All the major rivers of India originate in one or the other of these watersheds.

The main rivers of the Himalayan group are *Indus*, *Ganga* and *Brahmaputra*. These rivers are both snow-fed and rain-fed and have therefore continuous flow throughout the year. Himalayan rivers discharge about 70 per cent of the total discharge of the Indian rivers into the sea. This includes about 5 percent from central Indian rivers, that is, rivers which rise in central India. They join the Ganga and drain into the Bay of Bengal.

The Indus, which the Aryans called the Sindhu, has lent its name of India. Its valleys on boths sides have been the seat of a civilization, that was not only anterior but also superior in many respects to the fabled civilizations of Sumeria and Egypt. This historic river has five major tributaries—Jhelum, Chenab, Ravi, Beas and Sutlej. These in turn have inspired the name Punjab (punj=five & ab=river), the Land of Five Rivers The Indus rises from Mount Kailas in Tibet and traverses many miles through the Himalayas before it is joined by its tributaries in the Punjab. Thereafter it passes into Sind (Pakistan) to fall into the Arabian Sea.

The Ganga, famous alike in legend and history, is considered the most sacred river by the Hindus. It covers, what is called the heartland of India, which was the main centre of the ancient Aryan culture. It rises near the glacier, Gangotri in the Himalayas and flows through Uttar Pradesh, Bihar and Bengal to fall into the Bay of Bengal. Ganga and its tributaries Jamuna, Gomti, Garga, Sarda, Gandak, Chambal, Sone and Kosi, spread out like a fan in the plain of Hindustan thus forming the largest river basin in India, with an area, one quarter of the total area of India.

The Brahmaputra, rising in Western Tibet, flows for some 800 miles through the Himalayas, then turns south-west and then south, joining the eastenmost branch of the Ganga—the Padma—and empties together with Ganga into the Bay of Bengal.

Deccan Group. The rivers of Deccan denuding their beds for long geological ages have develped flat valleys with low gradients. This major Deccan rivers are *Godavari, Krishna, Cauvery, Pennar, Mahanadi, Damodar, Sharavati, Netravati, Bharatapuzha, Periyar, Pamba, Narmada* and *Tapti*. These rivers are entirely rain-fed with the result that many of them shrink into rivulets when the hot season opens. The Deccan rivers contribute about 30 percent of the total outflow in India. Of this, the rivers that flow from west to east account for 20 per cent and those from east to west about 10 per cent.

The Godavari, Krishna, Cauvery and Pennar all rise in the Western Ghats and traverse the plateau and the East Coast, to fall into the Bay of Bengal. Godavari has the second largest river basin in India, comprising about 10 per cent of the total area of India. The Krishna basin is the second largest in the Peninsula, and the third largest in the whole of India.

The Mahanadi and the Damodar rise in the north west of the plateau and flow east into the Bay of Bengal. The Mahanadi forms the third biggest basin in the peninsula and fourth in all India.

The Narmada and the Tapti rising in the northernmost extremity of the plateau fall into the Gulf of Cambay in the Arabian Sea. The Narmada has a fairly extensive basin, next only to those of Krishna and Mahanadi. *Rivers Sharavati, Netravati, Bharatapuzha, Periyar* and *Pamba* rise in the Western Ghats and cross the West Coast to fall into the Arabian Sea. These rivers are comparatively small with limited catchment areas and minor basins.

THE PEOPLE

The people of India are largely the descendants of immigrants from across the Himalayas. It is still a moot point whether any native race evolved on Indian soil.

We know that the species known as *Ramapithecus* were found in the Siwalik foothills of the north-western Himalayas. This species believed to be the first in the line of *hominids* (human family) lived some 14 million years ago. Recent researches have shown that a species resembling the *Australopithecus* lived in India some 2 million years ago. Even this discovery leaves an evolutionary gap of as much as 12 million years since Ramapithecus.

Polygenetic. Very little research has been done regarding the ethnic origins of the Indian population. Perhaps it is of little import now. The fact is that the Indian population is polygenetic and is a confusing mixture of various racial strains. Few, if any, can claim to belong to any particular stock. Nevertheless, many Indians pride themselves on their Aryan descent.

The observations of Natwar Singh, minister-historian, are relevant in this context. Says Singh, "The unpalatable truth is, that for a vast number of people in north India, immaculate ancestry is a mirage. He is a brave man, who can with certitude prove his Aryan or Scythian descent. He, that has traced his birth to a mythological ancestor, has done so, to draw attention away from the intervening generations".*

We are giving below descriptions of the various races in India according to the classical pattern.

Composition. According to Dr B.S. Guha, the population of India is derived from 6 main ethnic groups: 1. Negrito, 2. Proto-Australoids or Austrics, 3. Mongoloids, 4. Mediterranean or Dravidian, 5. Western Brachycephals and 6. Nordic Aryans.

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* K.Natwar Singh. *Maharaj Suraj Mahal* (1707-1763)

Brachycephalic (broad headed) Negroids from Africa were the oldest people to have come to India. These people are now found only in patches among the hill tribes of south India *(Irulas, Kodars, Paniyans and Kurumbas)* on the mainland. But they survive in the Andaman Islands, where they have retained their language.† They are an inconsequential element in the population of India.

Proto-Australoids or Austrics were a race of people, with wavy hair plentifully distributed over their brown bodies, long heads with low foreheads and prominent eye-ridges, noses with low and broad roots, thick jaws, large palates and teeth and small chins.

The Austrics of India represent a race of medium height, dark (and in some cases black) complexion with long heads and rather flat noses but otherwise regular features. Miscegenation with the earlier Negroids may be the reason for the dark or black pigmentation of the skin and flat noses. Austric tribes spread over the whole of India and then passed on to Burma, Malaya and the islands of South East Asia. "The Austrics form the bedrock of the people".††

The Austrics laid the foundation of Indian civilization. They cultivated rice and vegetables and made sugar from sugarcane. Their language has survived in the Kol or Munda speech, current in Eastern and Central India.

‡Dravidians comprise all the three subtypes, Paleo-Mediterranean, the true Mediterranean and Oriental Mediterranean. They appear to be people of the same stock as the peoples of Asia Minor and Crete and the pre-Hellenic Aegeans of Greece. They are reputed to have built up the city civilization of the Indus Valley, whose remains have been found at Mohenjo-daro and Harappa and other Indus cities. The Dravidians must have spread to the whole of India, supplanting Austrics and Negritos alike.

Mongoloids of various types are confined to the north-eastern fringes of India, in Assam, Nagaland, Mizo, Garo and Jainti Hills. Generally, they are people of yellow complexion, oblique eyes, high cheekbones, sparse hair and medium height.

Nordic Aryans who migrated to India were a branch of Indo-Iranians, who had originally left their homes in Central Asia, some 5000 years ago, and had settled in Mesopotamia for some centuries. The Aryans must have come into India between 2000 and 1500 B.C. Their first home in India was western and northern Punjab, from where they spread to the Valley of the Ganga and beyond. The Aryans, coming into India, encountered the highly civilized Indus Valley people who had big towns, with fortifications and brick structures and many of the amenities of a quite high city civilization. The Indus people were essentially a city people while the Aryans were a pastoral race.

Though it is not exactly known what happened to the Indus people or their civilization, it may be assumed that they intermingled with the incoming Aryans, who adopted the Indus culture as their own.

THE POPULATION

India has a population of 685,184,692 according to the census taken in 1981. But, the latest reckoning says that India's population has now grown to 76.2 crore and UNFPA projects a figure of 961,531,000 for 2000 A.D.

Although India accounts for only 2.4% of the total world area (world = 13589 million sq. km, India 3.28 million sq. km), it contains about 15% of the world population.

The other top countries in point of population are: China 21.72%, U.S.S.R. 6.05% and U.S.A. 5.04%. India, with China, U.S.S.R. and U.S.A. accounts for nearly 50% (48.34) of the world population.

The first census, that had an all-India

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† See Andaman & Nicobar Islands, infra.

†† Gazetteer of India

‡ The term **Dravidian** is derived from the pre-Hellenic Lycians of Asia Minor who called themselves **Trmmili**, which the Greeks wrote as **Termilai**. **Termilai** became **Dramiza**. **Dramiza** evolved itself in two ways: (1) In the South among the Dravidians, the process was **dramiza—damiz—Tamiz** (moderm Tamil), (2) In the north, among the Aryans **dramiza—dramila—dravida** (Dravidian)

* UNFPA United Nations Fund for Population Activities.

India Population Totals

India/State/ Union Territory	Population in 1971 (and rank)	Population in 1981 (and rank)	1981 (per sq. km)
INDIA	548159652	685184692	216†
States			
Andhra Pradesh	43502708 (5)	53549673 (5)	195
Assam*	14625152(13)	19896843(13)	254
Bihar	56353369 (2)	69914734 (2)	402
Gujarat	26697475 (9)	34085799(10)	174
Haryana	10036808(15)	12922618(15)	292
Himachal Pradesh	3460434(18)	4280818(18)	77
Jammu & Kashmir	4616632(16)	5987389(17)	59
Karnataka	29299014 (8)	37135714 (8)	194
Kerala	21347375(12)	25453680(12)	655
Madhya Pradesh	42654119 (6)	5217844 (6)	118
Maharashtra	50412235 (3)	62784171 (3)	204
Manipur	1072753(20)	1420953(20)	64
Meghalaya	1011699(21)	1335819(21)	60
Mizoram	332390(26)	493757(26)	23
Nagaland	516449(23)	774930(23)	47
Orissa	21944615(11)	26370271(11)	169
Punjab	13551060(14)	16788915(14)	333
Rajasthan	25765806(10)	34261862(9)	100
Sikkim	209843(28)	316385(28)	45
Tamil Nadu.	41199168 (7)	48408077(7)	372
Tripura	1556342(19)	2053058(19)	196
Uttar Pradesh	88341144 (1)	110862013 (1)	377
West Bengal	44312011 (4)	54580647 (4)	615
Union Territories			
Andaman and Nicobar Islands	115133(29)	188741(29)	23
Arunachal Pradesh	467511(25)	631839(24)	8
Chandigarh	257251(27)	451610(27)	3961
Dadra & Nagar Haveli	74170(30)	103676(30)	211
Delhi	4065698(17)	6220406(16)	4194
Goa, Daman & Diu	857771(22)	1086730(22)	285
Lakshadweep	31810(31)	40249(31)	1258
Pondicherry	471707(24)	604471(25)	1229

*Projected figures for 1981.

character, was taken in 1872. It was, however, a patchwork of census data taken in various parts of the country. The first regular census in India was taken in 1881. Thereafter, there have been regular censuses every 10 years. The 1981 census is the 12th census of India and the 4th since independence.

1981 Census. The population of India, as at sunrise on 1st March, 1981, was as follows: Total No. 685,184,692, Males: 354,467,000, Females: 330,717,692. These figures include the projected population for Assam where census could not be held in 1981 owing to disturbed conditions there.

The following table indicates the ranking of the States by population size in 1981 and 1971. Uttar Pradesh continues to dominate the scene and retains its first position. Most of the other States have continued to retain their original ranks. However, Rajasthan has stolen a march over Gujarat and has moved up from the 10th place in 1971 to the 9th place in 1981 while Gujarat has moved from the 9th place in 1971 to the 10th place in 1981. Delhi which was 17th in rank in 1971 has overtaken

Jammu and Kashmir and moved to 16th place while Jammu and Kashmir has moved from 16th place in 1971 to the 17th place in 1981. Similarly, Pondicherry and Arunachal Pradesh which were 24th and 25th in rank in 1971 have exchanged ranks in 1981.

Uttar Pradesh, Bihar and Madhya Pradesh together account for 34 per cent of the population or more than one-third of the population of India is in these three States.

Steady Growth. Except for a slight fall in 1911-21, the population of India has been steadily growing for the last 80 years (1901-1981). From 1951 onwards, the growth rate has been very high. In absolute terms, India's population has increased by 137 million in the decade 1971-81. This increase is 13 million more than the addition to the total population over the 50 years from 1901 to 1951.

All the States and Union Territories have had an increase in population but at different rates, and except for a few areas, the addition in numbers between 1971 and 1981 is higher than that between 1961-71. It is only in the states of Kerala, Orissa, Tamil Nadu and in the Union Territory of Goa, Daman & Diu that the absolute increase in the decade 1971-81 is lower than that in the former decade.

The decadal growth rates in these three states (Kerala, Orissa and Tamil Nadu) have been much lower than in the other States. The absolute increase in the decade 1971-81, as compared with that during 1961-71 is particularly noticeable in the case of Bihar, Rajasthan and Uttar Pradesh. This is important in demographic terms.

While there is doubtless an absolute increase in most cases, it will be noticed that in quite a few States the percentage decadal growth rate in the decade 1971-81 has been lower than that in the decade 1961-71. This is so in the case of Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura, West Bengal and in the Union Territories of Andaman and Nicobar Islands, Arunachal Pradesh, Chandigarh, Delhi, Goa, Daman & Diu and Lakshadweep.

The decadal growth rate in the decade 1971-81 has been higher than the corresponding rate of the previous decade 1961-71 only in the states of Andhra Pradesh Bihar, Karnataka, Nagaland, Punjab, Rajasthan, Sikkim, Uttar Pradesh and in the Union Territories of Dadra & Nagar Haveli and Mizoram.

Density. The average density of population per sq.km in 1981 was 216. Highest densities in the country, with over 1000 persons to the sq. km are shown by 4 Union Territories, namely Delhi (4194), Chandigarh (3961), Lakshadweep (1258) and Pondicherry (1229).

Delhi and Chandigarh are cities with peripheral rural areas. Lakshadweep and Pondicherry are comparatively small in area.

Density

(In descending order)

State/Territory	Density per sq. km. 1981	1971
1 Delhi	4194	2742
2 Chandigarh	3961	2257
3 Lakshadweep	1258	994
4 Pondicherry	1229	959
5 Kerala	655	549
6 West Bengal	615	499
7 Bihar	402	324
8 Uttar Pradesh	377	300
9 Tamil Nadu	372	317
10 Punjab	333	269
11 Haryana	292	227
12 Goa, Daman & Diu	285	225
13 Assam	254	186
14 Dadra & Nagar Haveli	211	151
15 Maharashtra	204	164
16 Tripura	196	148
17 Andhra Pradesh	195	158
18 Karnataka	194	153
19 Gujarat	174	136
20 Orissa	169	141
21 Madhya Pradesh	118	94
22 Rajasthan	100	75
23 Himachal Pradesh	77	62
24 Manipur	64	48
25 Meghalaya	60	45
26 Nagaland	47	31
27 Sikkim	45	30
28 Andaman & Nicobar Islands	23	14
29 Mizoram	23	16
30 Arunachal Pradesh	8	6

NATIONAL INSIGNIA

The State Emblem of India is an adaptation from the Sarnath Lion Capital of Asoka as preserved in the Sarnath Museum. The Government adopted the emblem on 26 January, 1950, the day when India became a Republic.

In the original of Sarnath Capital, there are four lions, standing back to back, mounted on an abacus with a frieze carrying sculptures in high relief of an elephant, a galloping horse, a bull and a lion separated by intervening wheels (chakras) over a bell-shaped lotus. Carved out of a single block of polished sandstone, the Capital is crowned by the Wheel of the Law (Dharma Chakra).

In the State Emblem adopted by the Government only three lions are visible, the fourth being hidden from view. The wheel appears in relief in the centre of the abacus with a bull on the right and a horse on the left and the outlines of the other wheels on the extreme right and left. The bell-shaped lotus has been omitted. The words, Satyameva jayate *from the* Mundaka Upanishad *meaning 'Truth alone triumphs', are inscribed below the abacus in Devanagari script.*

The National Flag *is a horizontal tri-colour of deep saffron* (Kesari) *at the top, white in the middle and dark green at the bottom in equal proportion. The ratio of the width of the flag to its length is two to three. In the centre of the white band is a wheel, in navy blue, which represents the* Charkha.§ Its design is that of the wheel (Chakra) *which appears on the abacus of the Sarnath Lion Capital of Asoka. Its diameter approximates to the width of the white band. It has 24 spokes.*

The design of the National Flag was adopted by the Constituent Assembly of India on 22 July, 1947. Its use and display are regulated by a code.

Rabindranath Tagore's song Jana-gana-mana *was adopted by the Constituent Assembly as the* National Anthem *of India on 24 Jan. 1950. The first stanza (out of 5 stanzas) of the song forms the National Anthem. It reads:*

Jana-gana-mana-adhinayaka jaya he
Bharata-bhagya-vidhata
Punjaba-Sindhu-Gujarata-Maratha-
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchhala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gathe tava jaya-gatha,
Jana-gana-mangala-dayaka jaya he
Bharata-bhagya-vidhate
Jaya he, jaya he, jaya he,
Jaya jaya jaya jaya he.

The following is Tagore's English rendering of the stanza:

Thou art the ruler of the minds of all people,
Dispenser of India's destiny.
Thy name rouses the hearts of the Punjab, Sind,
Gujarat and Maratha,
Of the Dravid and Orissa and Bengal.
It echoes in the hills of the Vindhyas and
Himalayas, mingles in the music of the Jamuna
and Ganges and is chanted by the waves of the
Indian Sea.
They pray for thy blessings and sing thy priase.
The saving of all people waits in thy hand,
Thou dispenser of India's distiny,
Victory, victory, victory to thee.

At the time of independence, the Govt. of India followed the Gregorian calendar based on the Christian era.

The National Government adopted the recommendation of the Calendar Reform Committee that the Saka era be adopted as the basis of the National Calendar. The Saka year has the normal 365 days and begins with Chaitra as its first month. The days of the Saka calendar have a permanent correspondence with the dates of the Gregorian Calendar, Chaitra 1 fallng on March 22 in a normal year and March 21 in a Leap Year. The National Calendar commenced on Chaitra 1 Saka, 1879 corresponding to March 22, 1957 AD.

The months of the National Calendar, with their days and the dates of the Gregorian Calendar corresponding to the first day of the Saka month are given below:

Saka & Gregorian Calenders*

1 Chaitra 30/31 days**	March 22/21**
1 Vaishaka 31	April 21
1 Jyaistha 31	May 22
1 Asadha 31	June 22
1 Sravana 31	July 23
1 Bhadra 31	Aug. 23
1 Asvina 30	Sept. 23
1 Kartika 30	Oct. 23
1 Agrhayana 30	Nov. 22
1 Pausa 30	Dec. 22
1 Magha 30	Jan. 21
1 Phalguna 30	Feb. 20

* As in 1982
** Leap Year

India's National Animal is Tiger *and National Bird is* Peacock.

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§ Khadi Spinning Wheel

There is not much point in comparing their densities with those of States. However, among the rest of the Territories and all the States, Kerala reports the highest density with 655 persons to the sq. km followed by West Bengal with 615.

The Sex Ratio is defined as the number of females per 1000 males in the population.

Sex Ratio 1901–1981

Year	Ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	938

The sex ratio has been generally adverse to women, i.e., the number of women per thousand men has generally been less than 1000. Apart from the fact that the sex ratio is adverse to women, it will also be noticed that the sex ratio has deteriorated over the decades. However, there is an apparent improvement in the sex ratio between 1971 and 1981.

The reason for the disparity in the sex ratio and the steady deterioration in the sex ratio are not quite clear. Explanations have been offered that there is a preference for male children resulting in neglect of female babies, that certain types of mortality are selective between males and females and that some part of the adverse sex ratio may be attributable to high maternal mortality.

There is little evidence to support the view that there is a deliberate neglect of female babies despite the fact that there may be a preference for male children. This is an area of uncertainty and requires further investigation.

It will be noticed that Kerala has the highest sex ratio of 1034 and is a solitary exception. In all the other States and Union Territories the sex ratio is adverse to women.

It is interesting to notice that certain States have had a fairly extended period where the sex ratio has been over one thousand, i.e., the sex ratio has been in favour of females. In the case of Kerala, the sex ratio has been throughout above 1000, while in Manipur, Orissa, Tamil Nadu, Goa, Daman & Diu, Lakshadweep and Mizoram it has been above 1000 for a considerable part of the period 1901 to 1981. On the other hand, the sex ratio has been constantly on the low side in comparison with other States and Union Territories in Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Tripura, Andaman and Nicobar Islands, Chandigarh and Delhi. At this stage one would be reluctant to offer specific reasons for this phenomenon and this is an area, as mentioned earlier, of uncertainty which would merit more detailed consideration on the basis of further information.

Sex Ratio—States 1981

In descending order

Rank	State/Territory	Sex Ratio
	India	933
1	Kerala	1032
2	Himachal Pradesh	973
3	Pondicherry	985
4	Orissa	981
5	Goa, Daman & Diu	981
6	Tamil Nadu	977
7	Lakshadweep	975
8	Andhra Pradesh	975
9	Dadra & Nagar Haveli	974
10	Manipur	971
11	Karnataka	963
12	Meghalaya	954
13	Jammu & Kashmir	892
14	Tripura	946
15	Bihar	946
16	Gujarat	942
17	Madhya Pradesh	941
18	Maharashtra	937
19	Mizoram	919
20	Rajasthan	919
21	West Bengal	911
22	Assam	901
23	Uttar Pradesh	885
24	Punjab	879
25	Haryana	870
26	Arunachal Pradesh	862
27	Nagaland	863
28	Sikkim	835
29	Delhi	808
30	Chandigarh	769
31	Andaman and Nicobar Islands	760

Literacy. One of the important characteristics on which information is obtained in the census is literacy. For the purposes of the census, a person is deemed literate if he or she can read and write with understanding in any language. A person who can merely read but cannot write is not defined as literate. Children below five years of age were treated as illiterate.

Literacy rates would be more meaningful if one were to exclude the population in the age group 0-4 from total population. However, at this stage, this information is not available since it would only be generated through further tabulations. Therefore, for practical purposes the entire population is being taken into account including the population in the age group 0-4.

The table below presents the figures for the country at each census year. In working out the rates for 1981, the population of Assam and Jammu and Kashmir have been excluded as the census has not yet been taken there. The rates upto 1941 are for undivided India.

Literacy 1901-1981

Year	Percentage	Males	Females
1901	5.35	9.83	0.60
1911	5.92	10.56	1.05
1921	7.16	12.21	1.81
1931	9.50	15.59	2.93
1941	16.10	24.90	7.30
1951	16.67	24.95	7.93
1961	24.02	34.44	12.95
1971	29.45	39.45	18.69
1981	36.17	46.74	24.88

States/Territories

Literacy ranking in 1981 and 1971*

Ranking in 1981	State/Union Territory	Literacy rate 1981	Literacy rate 1971	Ranking in 1971	Percentage increase of literacy
1	Kerala	70.42	60.42	2	16.55
2	Chandigarh	64.68	61.56	1	5.07
3	Delhi	61.06	55.61	3	9.80
4	Mizoram	59.50	53.79	4	10.90
5	Goa, Daman & Diu	55.86	44.75	6	24.83
6	Lakshadweep	54.72	43.66	7	25.33
7	Pondicherry	54.23	46.02	5	17.84
8	Andaman & Nicobar Islands	51.27	43.59	8	17.62
9	Maharashtra	47.37	39.18	10	20.90
10	Tamil Nadu	45.78	39.46	9	16.02
11	Gujarat	43.75	35.79	11	22.24
12	Manipur	41.99	32.91	14	27.59
13	Nagaland	41.99	27.40	9	53.25
14	Himachal Pradesh	41.94	31.96	15	31.23
15	Tripura	41.58	30.98	17	34.22
16	West Bengal	40.88	33.20	13	23.13
17	Punjab	40.74	33.67	12	21.00
18	Karnataka	38.41	31.52	16	21.86
19	Haryana	35.84	26.89	20	33.28
20	Orissa	34.12	26.18	21	30.33
21	Sikkim	33.83	17.74	27	90.70
22	Meghalaya	33.22	29.49	18	12.65
23	Andhra Pradesh	29.94	24.57	22	21.86
24	Madhya Pradesh	27.82	22.14	23	25.65
25	Uttar Pradesh	27.38	21.70	24	26.18
26	Dadra & Nagar Haveli	26.60	14.97	28	77.69
27	Bihar	26.01	19.94	25	30.44
28	Rajasthan	24.05	19.07	26	26.11
29	Arunachal Pradesh	20.09	11.29	29	77.95

Excludes Assam and Jammu and Kashmir.

One of the ironies in the Indian literacy situation is that while the percentage of literacy has been increasing every decade, the total number of illiterates has also been increasing. As between 1971 and 1981 the percentage has increased by nearly 7%. While this increase is reflected in the increase of literates by about 82 million the illiterates have also increased by 48 million as the following figures show.

	Literates	Illiterates
1971	156,440,275	372,145,203
1981	237,991,932	419,933,693

Female Literacy is of special importance in the Indian context because of the great disparity in male and female literacy rates. In 1901 there were 1466 male literates for every 100 females literates. By 1931 the disparity had been brought down to 560 males as against 100 females. Since 1950 the difference has been steadily whittled down bringing the ratio to 201 males for 100 females in 1981.

States & Union Territories By ranges of female literacy

State/Union Territory	Per cent female literates	Percentage increase of fem. literacy 1971-81
Female Literacy 50% and above		
Kerala	64.48	18.73
Chandigarh	59.30	9.11
Mizoram	52.57	12.55
Delhi	52.56	10.07
Female Literacy 25%—50%		
Goa, Daman & Diu	46.78	33.31
Pondicherry	44.30	27.96
Lakshadweep	44.21	44.67
Andaman and Nicobar Islands	41.85	34.52
Maharashtra	35.08	32.73
Punjab	34.14	31.81
Tamil Nadu	34.12	27.03
Nagaland	33.72	80.80
Gujarat	32.31	30.55
Tripura	31.60	49.13
Himachal Pradesh	31.39	55.17
Manipur	30.69	57.14
West Bengal	30.33	35.28
Meghalaya	29.28	19.22
Karnataka	27.83	32.71
Female Literacy less than 25%		
Haryana	22.23	49.29
Sikkim	22.07	147.98
Orissa	21.11	51.65
Andhra Pradesh	20.52	30.29
Dadra & Nagar Haveli	16.75	113.65
Madhya Pradesh	15.54	42.31
Uttar Pradesh	14.42	36.68
Bihar	13.58	55.73
Rajasthan	11.32	33.81
Arunachal Pradesh	11.02	197.04

Progress of Female Literacy 1901-1981

Year	Number of literates Males	Females	Literate males per 100 lit. females
1901	11870758	809580	1466
1911	13552737	1298484	1043
1921	15690428	2221499	1208
1931	22274036	3977034	560
1941	NA	NA	NA
1951	46272335	13916683	332
1961	77906038	27565962	283
1971	112012994	49423270	227
1981	158837215*	79154717*	201

* Excludes Assam and Jammu and Kashmir. 'NA' stands for not available.

RELIGIOUS COMMUNITIES

The major religious communities of India are the Hindus, Muslims, Christians, Sikhs, Buddhists and Jains. Of these the last two are numerically insignificant but they are important in other ways.

Of the 665,287,849 people in India in 1981 (Assam not included), the Hindus account for the largest community with 549,779,481 members. Other communities are divided as follows:

Muslims: 75,512,439, Christians: 16,165,447, Sikhs: 13,078,146, Buddhists: 4,719,796, Jains: 3,206,038, Other Religions: 2,766,285, Religions not stated: 60,217.

The Scheduled Castes and Scheduled Tribes who are part of the Hindu community form over 23.51% of the total population, about 156 million.

The data of the 1981 Census offers some other statistics also of interest to religious sociologists. The Appendix of the Household Population gives 183 subdivisions that are grouped together in the general statistics as "other religions and persuasions."

Of these, 71,630 are Zoroastrians, and 5,618 Jews.

Adivasi. There are 25,416 "Adivasis" by religion and there are 1,367 "tribals" (in Nagaland), 119 "animists", and 25,985 whose religion is simply "Non-Christian" (in Manipur, Meghalaya and Nagaland), together with 796 "pagans" in the same three States, and 1,215 "Meathan" in Manipur.

Some other tribals have given their specific tribal identity as their religions: as for example, the census has the record of 484 Oraons, 32,252 Santals, 1,481 Garos, 6,975 Gonds, 4,133 Hos, 148,437 Khasi, 1,160 Mundas, 1,296 Nagas.

Nirankaris, numbering 3382, of apparently Hindu following, have entered themselves under geographical or caste terms like Agarwal, Bengali, Gujarati, Maharashtrian, Marathi, Marwari, Malayalee, Tamilian and Teluguite.

Perhaps of more interest is that a total of 29,086 persons corresponding to 5,117 households consider themselves as "atheists" (predominantly in rural areas of Tamil Nadu, Maharashtra, Madhya Pradesh, Manipur and Bihar). There are 816 humanists ("manab dharma"), half of them in Maharashtra.

Census of 1981 gives some other interesting data too.

Fertility. "The total fertility rate in India (excluding Assam) is 3.9 in rural areas, 2.8 in urban areas, and 3.6 for total areas.

"It may be noted that fertility is higher among Muslims, followed by Buddhists, Hindus, Sikhs, Jains and Christians.

"At the national level, the total fertility rate for both Jains and Christians is identical, being 2.6. However, both in rural and urban areas the fertility of Jains is higher than that of Christians.

"This apparent contradiction in the total fertility rate for all areas is due to the rural-urban distribution differentials in these groups."

Religious Members

Religions	Membership	Percentage
Hindus	549,779,481	82.64
Muslims	75,512,439	11.35
Christians	16,165,447	2.43
Sikhs	13,078,146	1.96
Buddhists	4,719,796	0.71
Jains	3,206,038	0.48
Other Religions	2,766,285	0.42
Religion not stated	60,217	0.01

Growth Highest And Lowest

Which are the slowest growing and fastest growing communities in India? According to 1981 Census, Christians have the lowest growth-rate recorded for the 10 years between 1971 and 1981. And Muslims have the highest.

The Census of 1971 accounted for 13,844,031 Christians in India and by 1981 they grew to become 16,165,447—a growth of 16.17 per cent.

By comparison, in the same period, the Muslims grew by 30.59 per cent while the Sikhs by 26.15, the Hindus by 24.15, Jains by 23.69 and the Buddhists by 22.52.

In this period the average population growth of the country was 24.69, while the Christians' was 8.52 per cent less than the average, the Muslims' was 5.9 per cent above.

The total fertility rate for Sikhs is 3.4, for Hindus and Budhists 3.6 and for Muslims 4.1.

Female Ratio. The Christian female ratio compared to the males is by far the highest among the various communities. They have for every 1,000 males, 992 females; while Buddhists have 953, Jains 941, Muslim 937, Hindus 933 and Sikhs 880.

But on the other hand, according to census report, Christian women tend to marry rather late and therefore the percentage of married women in the fertile age group (between 15 and 49) is only 62.15, while for the Sikhs it is 70.40, for Jains 72.09, for Buddhists 79.26, for Muslims 80.42 and for Hindus 82.35.

PRINCIPAL LANGUAGES

India has 15 officially recognised languages. This is an evolution in a land of myriad tongues. The 1961 and 1971 Censuses had listed 1652 languages as the mother tongues spoken in India. This Babel of tongues has been built up through the ages by the various races that came into the land from time immemorial.

The Indian languages of today have evolved from different language families corresponding more or less to the different ethnic elements that have come into India from the dawn of history. They may be grouped into 6 groups as under: 1. Negroid, 2. Austric, 3. Sino-Tibetan, 4. Dravidian, 5. Indo-Aryan and 6. Other Speeches.

These languages have interacted on one another through the centuries and have produced the major linguistic divisions of modern India. Among the major groups, the *Aryan* and the *Dravidian* are the dominating families. They have influenced each other and have, in turn, been influenced by the Austric and Sino-Tibetan tongues. It is easy to spot Sino-Tibetan and Austric borrowings in the Aryan and Dravidian languages and mutual borrowings of the Aryan and Dravidian groups.

The Aryan. *Indo-Aryan*, the Indic branch of the Indo-European family, came into India with the Aryans. It is the biggest of the language groups in India, accounting for about 74 per cent of the entire Indian population.

The important languages in this group are: Western Punjabi, Sindhi, Eastern Punjabi, Hindi, Bihari, Rajasthani, Gujarati, Marathi, Assamese, Bengali, Oriya, Pahari, Kashmiri and Sanskrit.

Hindi or Hindustani has produced two great literatures, *Urdu* and (High) *Hindi*. Both have the same grammar and the same basic vocabulary. They differ, however, in script and higher vocabulary. *Urdu* uses the Perso-Arabic script. *Hindi* uses the Nagari script and has a preference for purely Indian words, in contradistinction to the numerous Arabic and Persian words borrowed by Urdu.

Sanskrit, the classical language of India, represents the highest achievement of the Indo-Aryan languages. Although hardly spoken now-a-days, Sanskrit has been listed a nationally accepted language in the VIII Schedule to the Constitution.

Dravidian languages form a group by themselves, and unlike the Aryan, Austric or Sino-Tibetan speeches, have no relations outside the Indian subcontinent, that is, India, Pakistan and Bangladesh. The Dravidian family is the second largest group in India,

Syrian Christians

The Gazetteer of India considers the Syrian Christians an immigrant community who had discarded their native Syrian in favour of the language of their domicile—Malayalam. This is a misinterpretation.

Of course, there is a small section of Syrian Christians who claim that they are descended from the original Syrian settlers in Kerala. But the great majority of the Syrian Christians do not make any such claim. On the other hand, they pride themselves in being the descendants of Indians who were converted to Christianity by St. Thomas the Apostle in the first century A.D.

From the earliest times, the Syrian community on the west coast of India was in communion with the Christian churches in the Middle East from whom they derived their Syrian liturgy. This is why they were called Syrian Christians and not because they were Syrian immigrants.

covering about 25% of the total Indian population

The Dravidian language came into India centuries before the Indo-Aryan. It split into three branches in the Indian subcontinent—(i) The northern branch comprised *Brahui* spoken in Baluchistan and *Kurukh* and *Malto* spoken in Bengal and Orissa. (ii) The central branch was composed of *Telugu* and a number of dialects spoken in Central India—*Kui, Khond, Holani, Konda, Gondi, Naiki, Parji, Koya* and others. (iii) The southern branch was made up of *Tamil, Kannada, Malayalam, Tulu, Badaga, Toda, Kota* and *Kodagu.*

The outstanding languages of the Dravidian group are: (i) *Telugu, the State language of Andhra Pradesh, numerically the biggest of the Dravidian languages. (ii) Tamil, the State language of Tamil Nadu, apparently the oldest and purest branch of the Dravidian family. (iii) Kannada, the State language of Karnataka, another ancient Dravidian language that has developed individually. (iv) Malayalam, the State language of Kerala, the smallest and the youngest of the Dravidian family.*

Common Language.

India never had a common language which was intelligible to the masses everywhere in India. For many years, Sanskrit remained a common medium. But it was the language of the learned classes and not of the masses. Under the British, English became a sort of lingua franca. Here again, it was restricted to the educated few.

With independence, the question of a common language naturally came up. The Constituent Assembly could not arrive at a consensus in the matter. The question was put to vote and Hindi won on a single vote—the casting vote of the President.‡ Hindi however, was only one of the many regional languages of India. The Indian National Congress had advocated the formation of linguistic provinces. The acceptance of this policy involved the statutory recognition of all the major regional languages.

Of the 1652 mother tongues listed in the census, 33 were spoken by people numbering over a lakh. The following table shows the names of mother tongues and the number of speakers.

Mother Tongue ...	Speakers
Hindi ...	153,729,062
Telugu ...	44,707,797
Bengali ...	44,521,533
Marathi ...	41,723,893
Tamil ...	37,592,794
Urdu ...	28,600,428
Gujarati ...	25,656,274
Malayalam ...	21,917,430
Kannada ...	21,575,019
Oriya ...	19,726,745
Bhojpuri ...	14,340,564
Punjabi ...	13,900,202
Assamese ...	8,958,977
Chhattisgarhi ...	6,693,445
Magahi/Magadhi ...	6,638,495
Maithili ...	6,121,922
Marwari ...	4,714,094
Santali ...	3,693,558
Kashmiri ...	2,421,760
Rajasthani ...	2,093,557
Gondi ...	1,548,070
Konkani ...	1,522,684
Dogri ...	1,298,855
Gorkhali/Nepali ...	1,286,824
Garhwali ...	1,227,151
Pahari ...	1,269,651
Bhili/Bhilodi ...	1,250,312
Kurukh/Oraon ...	1,240,395
Kumauni ...	1,234,939
Sindhi ...	1,204,678
Lamani/Lambadi ...	1,203,338
Tulu ...	1,156,950
Bagri ...	1,055,607

Source: Language Handbook

The Constitution therefore recognized Hindi in Devanagari script as the official language of the Union (Art. 343 et seq.) and the regional languages as the official languages of the States concerned (Art. 345 et seq.). English was recognised as the authoritative legislative and judicial language (Art. 348 et seq.). A schedule—the 8th Schedule—was added to the Constitution to indicate all regional languages statutorily recognised. The Schedule now contains 15 languages as follows:

(1) Assamese (2) Bengali (3) Gujarati

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‡ Ordinarily when there is a tie between two groups in a meeting and the President is called upon to exercise his casting vote, he votes for the status quo. Here it was the other way round.

(4) Hindi (5) Kannada (6) Kashmiri (7) Malayalam (8) Marathi (9) Oriya (10) Punjabi (11) Sanskrit (12) Tamil (13) Telugu (14) Urdu (15) Sindhi.

Recognized Languages. Of the 15 languages listed in the schedule, all except three—Sanskrit, Kashmiri and Sindhi—are official languages of the various States.

Assamese, an Indo-Aryan language, is the official language of Assam State. More than 57 per cent of the population of Assam speak Assamese.

Assamese has developed as a literary language from the 13th century.

Bengali, one of the leading Indo-Aryan languages, is the official language of West Bengal. It is spoken by 86 million people, the majority of whom are now in Bangladesh, formerly East Pakistan. Bengali emerged as a separate language around A.D. 1000. It is now one of the most advanced languages of India.

Gujarati, a member of the Indo-Aryan family, is the official language of the State of Gujarat. Gujarati started out as an independent language around A.D. 1200. It has progressed at a rapid pace and is now one of the most developed Indian languages.

Hindi, numerically the biggest of the Indo-Aryan family is the official language of the Government of India.

Among the various dialects of Hindi, the dialect chosen as official Hindi is the standard ***Khariboli,*** written in Devanagari script. This speech was originally spoken in Delhi and some western UP districts. From the literary point of view, the term Hindi covers not only the Khariboli form, but also a number of other dialects like Brajbhasha, Bundeli, Awadhi, early Marwari of Rajasthan and the Maithili and Bhojpuri speeches of Bihar.

Being the official language of six States and the Indian Union today, Hindi is receiving high patronage. This patronage and support has encouraged the development of Hindi as a great literary language.

Kannada, the official language of the state of Karnataka, belongs to the Dravidian family. The majority of its speakers is found in Karnataka where they form more than 65 per cent of the population. Kannada, as an independent language, dates from the 9th century. It has rich literary traditions.

Kashmiri, a language of the Indo-Aryan group, is often mistaken as the state language of Jammu and Kashmir. Actually, Urdu is the State language of Jammu and Kashmir.

Kashmiri-speaking population in Jammu and Kashmir comes to about 55 per cent of the total population. Kashmiri literature goes back to A.D. 1200. it is comparatively a developed language. It is written, at present, in the Perso-Arabic script.

Malayalam, a branch of the Dravidian family, is the official language of the State of Kerala. Malayalam struck out on its own by the 10th century A.D. It is one of the most developed languages of India.

Marathi, belonging to the Indo-Aryan stock, is the official language of Maharashtra.

Though Marathi separated from the main Indo-Aryan stock at a very early date, its literary career began only in the 13th century. Since then, it has made wonderful progress. It has today a fully developed literature of the modern type.

Oriya, a branch of the Indo-Aryan family, is the official language of the State of Orissa, where Oriya-speaking population comprises some 82 per cent of the population.

Oriya is found recorded as far back as the 10th century. But its literary career began only in the 14th century.

Punjabi belongs to the Indo-Aryan family and is the official language of the State of Punjab.

Punjabi, though a very ancient language, turned literary only in the 15th century. From the 19th century, Punjabi showed vigorous development in all branches of literature. It is written in the Gurumukhi* script.

Sanskrit, the classical language of India, is also one of the oldest languages of the world—perhaps the very oldest to be recorded. It starts with Rig Veda, which appears to have been composed around 2000 B.C. Early Sanskrit is known as Vedic Sanskrit and covers the period between 2000 and 500 B.C. Classical Sanskrit covers the period between 500 B.C. and A.D. 1000.

Sindhi is a branch of the Indo-Aryan family. It is spoken by some 7 million people, of whom 5½ million live in Sind (Pakistan), and the rest mostly in India.

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* 'Gurumukhi' literally means 'from the face of the guru'. It is the name given to the script devised by the Sikh guru, Guru Angad, in the 16th century. The Gurumukhi is based on the old Sharda script, which is related to the Nagari script.

Sindhi has preserved some of the archaic features of the old Indo-Aryan language. Sindhi uses the Perso-Arabic script in Pakistan. Speakers in India use the Devanagari script. Of late Sindhi has developed noteworthy literature also.

Tamil, the oldest of the Dravidian languages, is the State language of Tamil Nadu. Tamil literature goes back to centuries before the Christian era. "In originality, though not in extent, Tamil literature stands by itself". It represents certain new literary types which are not found in Sanskrit or other Aryan languages. The language is spoken by 30 million or more and judging by its modern publications, it is advancing at a fantastic pace.

Telugu, numerically the biggest of the Dravidian languages, is the State language of Andhra Pradesh. It is the biggest linguistic unit in India, next to Hindi. Telugu is found recorded from the 7th century A.D. But it was only in the 11th century that it broke out into a literary language.

Urdu, the State language of Jammu and Kashmir, is spoken by more than 28 million people in India (1981 census).

The name Urdu is derived from 'Zaban-e-Urdu-Muala' which means the language of the exalted camp or court. The exalted camp or court here meant the camp or court of the ruling Sultans of Delhi.

Urdu and Hindi have proceeded from the same source, that is, from the Khariboli speech of Delhi and surrounding areas. The Khariboli was a spoken language which prevailed around Delhi, since the 13th century.

In the 19th century, when the Delhi Sultanate disappeared and the British became the rulers, Sir Sayyed Ahmed Khan (1817—1898) started a revival of Urdu, as the language of the Muslims in India. Modern Urdu was thus born.

Urdu has produced an extensive literature. Muslim speakers of Urdu use the Perso-Arabic script while Hindus use the Devanagari script. Urdu is also written in Roman characters.

Official Languages. Art. 343 of the Constitution provided that for a period of 15 years from the commencement of the Constitution the English language shall continue to be used for all official purposes of the Union. It was expected that after the expiry of the stipulated period (that is after 1965) Hindi will displace English as the official language of the Union.

Subsequent developments have turned the current in favour of continuing English as an additional official language, no definite date being fixed for its elimination and replacement by Hindi.

As matters stand, the languages listed in the Constitution remain the official languages in the respective States, while Hindi and English continue to be used for inter-State correspondence and for all-India use generally.

INDIAN LITERATURE

Indian Literature is one though written in many languages—this has been the slogan of the Sahitya Akademi ever since its inception. There are 15 officially recognised languages in India and each has produced a literature of great vitality and richness. Though distinctive in parts, all stand for a homogenous culture that is the essence of the great Indian Literature.

The Indian constitution has officially recognised 15 languages after taking into consideration their numerical, commercial, political and cultural importance. But the number of mother-tongues as per 1961 Census is 1652. This bewildering figure has been arrived at, taking into account even dialects spoken only by five persons. The 1971 census gives a more realistic figure of 700, having taken into account the dialects spoken by 1000 people and above.

These languages belong to four major speech families — the Aryan, the Dravidian, the Sino-Tibetan (or Mongolian) and the

Austric. But the 15 major languages come under the Indo-Aryan (11) and the Dravidian (4). They are also literary languages. The Sahitya Akademi (the Natioanl Academy of Letters) has approved not only these 15 languages, but also English and six more Indian languages (Dogri, Konkani, Manipuri, Maithili, Nepali and Rajasthani) for its activities.

The addition of six languages was done after a good deal of deliberation by expert committees appointed by the Akademi since 1960. Thus we can say that Indian literature is produced in at least 22 languages. In other words, there are 22 Indian Literatures recognised by the Sahitya Akademi.

Since its inception in 1954, the Sahitya Akademi has been propagating the idea of cultural unity by using the slogan "Indian Literature is one though written in many languages". This aphoristic statement is honestly questioned by thinkers who point out that literature is language-based and hence it is intrinsically linked with the language in which it is written.

The literature of a particular language has its own special form, symbols and nuances. Therefore it is more logical to say that there are as many literatures in India as there are languages which have flowered into literature. This approach has its own relevance or force. But there is another side to the question. When we survey the various literatures of India, it is possible to recognise some common characteristics which reveal their Indian-ness, some threads which hold them together despite their distinctive flavour or diverse association.

The like-minded response of our creative writers in the many languages to common problems and similar experiences is unmistakably clear. Therefore the use 'Indian Literature' in the singular is as acceptable as its use with the plural. As a matter of fact, Western Orientalists and Indologists as also Indian scholars and historians have used the term in the singular and also in the plural as evidenced from the titles of books written by them and no one has questioned the usages. But it is significant that no one uses the term 'The Indian Language' (in the singular) as there is no language which can make such a claim.

English has been used by Indians for literary expression in the last 200 years. Thus we have 22 developed languages in India, which produce 22 literatures and these have a substantial common denominator justifying the expression 'the Indian literature'.

These 22 languages are not equal in their development and national or state support. No doubt all the regional languages have received a fillip after the attainment of independence. English, though foreign in origin, still plays an important role as the associate official language and the most effective link language both within India and outside India. Indians have made their own contribution to the English language in creative writing and in intellectual persuasions. That is why the Sahitya Akademi has approved it for its programmes.

We have 22 developed languages in India, which produce 22 literatures and these have a substantial common denomination justifying the expression 'the Indian Literature' with its intrinsic variety.

Even the 15 scheduled languages which the Akademi had originally approved differs in their background, historical development and functional relevance. Sanskrit language and its literature has a special place in our civilization. It is the oldest classical language and had functioned as the most powerful formative agency and integrating force from the very beginning of Indian history and civilization.

Spoken Sanskrit (by whatever name it has been called) is the fountain from which the languages of Aryan India had originally sprung; the principal portion of their vocabulary and their inflexional system being derived from this source. Even the Dravidian languages which have a considerably different morphological system are indebted to Sanskrit in the realms of vocabulary and phonology with the partial exception of Tamil. Acually, there is no important language or literature in India which has not

For a period of about 40 years, Bengali language dominated in Assam especially in administration and education. But that came to an end with the renaissance of Assamese.

been influenced and enriched by Sanskrit and its great literature. Traditional Indian culture cannot be properly understood without the help of Sanskrit. This has been well recognised by orientalists but the complementary role played by ancient Tamil works representing the Dravidian has not been appreciated as much as it should have been.

Next to Sanskrit comes Tamil with reference to the antiquity of literature. Except Tamil in the South and Urdu in the North, almost all the modern Indian languages emerged more or less within the same period of Indian history. Urdu has only a heritage of about five centuries.

As regards state patronage there is considerable variation. Hindi has a pre-eminent place in the national set up as the official language of the Union of India and that of six states. Kashmiri and Sindhi have no state to support them as official languages. Sanskrit remains apart as a classical language, the other languages have a state to support and foster: Assamese (Assam), Bengali (West Bengal), Gujarati (Gujarat), Kannada (Karnataka), Malayalam (Kerala), Marati (Maharashtra), Oriya (Orissa), Punjabi (Punjab), Tamil (Tamil Nadu), Telugu (Andhra Pradesh) and Urdu (Jammu & Kashmir). Brief reviews of the twenty-two literatures are given below:

ASSAMESE

Though the antiquity of the Assamese language can be traced back to the seventh century A.D. it has sprouted into literary forms only by the 13th century. Rudra Kandali's translation of 'Dronaparva' (of the *Mahabharata*) and Madhava Kandalis' rendering of the *Ramayana* are two works of classical eminence of the early period. The new Vaishnavate movement in the 15th century AD gave an impetus to the vernacular literature. Sankara Dev (1449-1568), during his long life, popularised the movement by his great poetic compositions, dramas and lyrics.

The poetical productions from the 16th to the 19th centuries may be classified into six categories: (i) translation from the epics and puranas, (ii) Kavyas based on episodes, and stories from the epics and puranas, (iii) lyrics, (iv) secular and utilitarian Kavyas, (v) biographical works and (vi) devotional anthologies and compendia. Traditional poetry was composed keeping an assembly of listeners in view as literacy was confined to the privileged classes.

The great names that should be remembered are Bhattadev (1558-1638) who popularised Assamese prose, Damodara Dev, who wrote important biographies, and Purushottam Thakar who wrote grammatical works. The Buranjis constitute a glorious chapter in Assamese literature. Actually modern Assamese prose emerges from Buranjis, though the European missionary has also an important role in the shaping of modern prose. In the 17th century a prose version of the *Ramayana* was written. Literature also broke out into secular channels.

The last three quarters of the 18th century and the first half of the 19th century were on the whole a barren period. Then with the influences of the west, the modern period commences. For a period of about 40 years (1836-72) Bengali language dominated in Assam especially in administration and education; but that came to an end especially when the Christian Missionaries started their work of compiling dictionaries and grammar of Assamese and translating the Bible in simple prose. The translation of the whole Bible into Assamese by the missionaries and its publication in 1813 was an important event.

The leades of renaissance in Assamese literature are Chandrakumar Agarwalla (1858-1938), Lakshminath Bezbarua (1867-1938), and Hemachandra Goswami (1872-1928). The monthly *Jonaki* which ushered in the romantic movement was founded by them. The leading novelists of the 19th century were Padmanath Gohain Barua and Rajanikantha Nardoloi. Both of them have written quite a few historical novels. In the field of social novel, the important names are Dandinath Kalita Daiba Chandra Talukdar and Bina Barua. In the post-Independent period the more important fiction writers are Syed Abdul Malik (B. 1919), Jogesh Das (B. 1927) and Birendra Kumar Bhattacharya (B. 1924), the last one has annexed the Jnanpith Award (1979). Assamese is fairly rich in short story, personal essay, biography and other forms of modern prose. Both in poetry and prose, a Marxian emphasis is evidenced in the forties and fifties of the present century. Western literature has considerably influenced contemporary writing.

BENGALI

Historians of Bengali literature find early forms of Bengali writing between the 8th and 12th century AD. Among these the Nath literature of the 12th century is more important from the literary point of view. This form of literature has emerged from the Buddhist Sahajiya cult. The Vaishnava cult also gained ground. From the middle of the 14th century, Radhakrishna lyrics became very popular and Chandidas was the great spokesman of this form of writing. He has composed about a thousand poems.

Translations or rather adaptations of the Ramayana became very popular in the 15th century. The most well-known is the *Ramayana* by Kittivas Ojha. Critics consider it an adaptation of one particular book. *Ramayana* of Kittivas is revered as much as *Ramacharitamanasa* of Tulsidas in North India.

The types of literature which became popular after the Bengali rendering of the classical Sanskrit works, is called *Mangala-Kavyas*. They are long narrative poems extolling the struggle of a god or goddess to establish himself or herself against certain rivals. There are three recognised varieties of *Mangal Kavyas:* (i) *Manasa mangala* (ii) *Chandi Mangala* and (iii) *Dharma mangala,* each representing a separate godhead.

Quite a number of Bengali writers are known beyond the borders of Bengal. Several movements in literature sprouted in Bengali first and then spread over to other languages in India.

The advent of Sri Chaitanya (1486-1533) was an epoch-making event in Bengali literature which spread to neighbouring languages as well. The life and teachings of Chaitanya made Vaishnavism a living faith. Many of his disciples produced literature of great power and the influence continued for over two centuries. The literature comprised two classes, lyric poetry and biographical works. The Radhakrishna love songs were so popular that even Muslim poets composed some poems on the same theme.

The 18th century was, comparatively speaking, a period of decadence in Bengali poetry. The modern period begins practically with the 19th century. Bengali prose evolved and developed in such a manner that it became a suitable medium for literary expression. For this development the European Missionaries and the English educated Bengalis were considerably responsible. The missionaries produced grammars and dictionaries and they translated the Bible into Bengali prose.

The establishment of the Fort William College at Calcutta in 1800 was an epoch-making event. The contribution of William Carey, a Serampore missionary was so substantial and significant to Bengali and other Indian languages that it will never be forgotten. Carey wrote a Bengali grammar, compiled an English-Bengali dictionary and organized the translation of the Bible in Bengali.

Translation of English literary works gave a fillip to Bengali prose writing. At the same time, translation from Sanskrit was not disregarded. While poetry gained a new dimension, new literary forms like the novel, the short story, the personal essay and biography took shape in the language. The most outstanding poet of mid-19th century Madhu Sudan Datta who composed the classic *Meghanath Bad Kavya,* the first epic poem in Bengali in the western sense. He was in-

Gunther Grass for 'Saul's Journey'

Gunther Grass, the celebrated German novelist is in Calcutta now. It is a return after 10 years. He wants to live there for a year to gather first hand experience to write a new novel, probably the untold saga of Calcutta's teeming millions.

For Gunther Grass, the creator of Oskar Mazerath, the dwarf tin-drummer in his celebrated novel 'The Tin Drum' India is like a homecoming. His experience in Calcutta earlier was "like Saul's journey through Damascus". He graphically described his experience with the city of gloom in 'The Flounder'.

Tin Drum', published nearly 30 years ago was Grass's first novel. In it the drummer pounded out his devastating view of the rise and fall of the Third Reich. This stoic drummer has been revived in his latest book, 'The Rat'.

Controversy has trailed this writer who breathed life into literature in post-war Germany. Brushing aside the hangover of the World War guilt, which he has dealt with in his early works, Grass has now undertaken the gargantuan task of trying to understand India, its suffering masses, the raging poverty and its culture.

spired by Homer, Virgil and Dante. He also wrote some plays which differ from the traditional *yatra* type.

Bankim Chandra wrote his first romantic novel *Durgesh Nandini* in 1865. This gave a thrill to the readers of Bengali and soon translations appeared in sister languages. Bankim wrote more novels like *Anand Math, Raja Sinha, Visha Vriksha* etc. that he was hailed as a pioneer novelist in India. Sarat Chandra followed him with several novels of classical dignity and charm. His *Nishkriti* (Release), *Bindur Cele* (Bindus Ward) and *Srikanta* are particularly well-known. In the third quarter of the 19th century Bengali literature was brimming with activity in all the genres of literature.

But it reached the summit of its glory through the life-long service of Rabindranath Tagore. It was actually a spiritual endeavour for the bard. Thousands of lyrics, poems and songs, about a dozen novels, three dozen plays, volumes of short stories and a mass of prose literature flowed from his pen. His translation *Gitanjali* in English brought him international fame when he annexed the Nobel Prize in 1913. His *Gora* is considered the only epic novel in our literature.

The post-Tagore period of Bengali literature is also rich. Here we find novelists like Tarashankar Banerji, Manik Banerji and Bibhuti Bhushan Banerji in the field of fiction, Jibananda Das, Nazrul Islam, Subhindra Nath Datta, Buddha Dev Bose, Premendri Mitra and Bishnu De in poetry, Dinabandhu Mitra, G. C. Ghose and Dwijendralal Roy in the field of Drama and a host of others who have an established reputation in Bengali. Quite a few of them are known beyond the borders of Bengal. It may also be stated that several movements in literature sprouted in Bengali first and then spread over to other languages in India.

GUJARATI

Gujarati language evolved from one of the dialects of the standard Gurjara Apabhramsa and got a distinctive form by the 12th century. Jain influence is quite strong especially in the early periods. The history of Gujarati literature falls into four broad periods: (1) 1250-1456 (2) 1456-1650, (3) 1650-1825; and (4) 1825-1975.

By about 1250 Gujarata became an independent political unit with considerable achievement in art and literature. Sanskrit was cultivated and libraries were set up in the monasteries. Saivism became strong

Heroic romance, historical chronicle and the romantic tale are the principal narrative forms of this early period. *Rasa*, originally a folk-dance was converted into melodious dramatic poetry by Jain authors. *Fagu*, a shorter and more lyrical poem also became popular. Jina Padma, Raja Sekhara and Jayasekhara (all of the 14th century) were important poets who popularised the *fagu*. Romantic tales in verse also had their vogue. The Jain scholars took to writing in prose which was elegant and simple. *Prithvichandra* (1422) by Manikya Chandra is a reputed work of poetical prose.

In the second period the language breaks away from the Rajasthani idiom. Hinduism takes the place of Jainism as the main source of literary inspiration. The epics and puranas flow into Gujarati. The great poets of the period are Narasimha and Mirabai; the latter is being claimed by languages like Hindi and Rajasthani. Narasimha Mehta (1414-1480) though not the first Gujarati poet, is considered to be the father of Gujarati poetry like Ezhuthachan in Malayalam. His Govinda-Gamana and Sudama Charitra are most well known.

Mirabai who wrote in Gujarati is the most celebrated poetess of India. Her bridal devotion to her Lord Krishna has a ring of purity and is a fine example of the sublimation of the sex element.

Mirabai (1499-1547) is the most celebrated poetess of India. Her bridal devotion to her lord Krishna has a ring of purity and is a fine example of the sublimation of the sex element. After them comes Bhalana (1434-1514), the great scholar and artist who has adapted *Kadambari*, *Nalakhyana* and *Ramabalacharita*. Bana's prose work *Kadambari* has been rendered in a versified form.

Here Bhalana shows the art of pruning the luxuriance of the original and adding imageries of local significance. Nakara (1500-1575) and Vishnudasa (1564-1632) enriched the Akhyana literature. The *Ramayana*, the *Mahabharata* and the *Puranas* were brought into Gujarati in an assimilable form by them. Akho (1591-1656) of Ahmedabad was the champion of Vedantic poetry in Gujarati.

Thus we pass on to the third period when Akbar formed the province of Gujarat separating it from Marvad. Life was dull from about 1700 until the British came to the scene. Premanand (1636-1734) is the finest poet of this period. He brought the *Akhyana* technique to perfection. The 16th century was rich in romantic tales which were composed by Jain and non-Jain poets alike. We thus come to the modern period where the impact of the west is clearly seen in the literary productions. Dalapatram (1820-1898) and Narmadasankar (1833-86) were the leaders of this new age. They were scholars and classical poets. Nanda Sankar's *Karana Ghelo* (1866) is the first novel in Gujarati. But the most celebrated novel *Saraswati Chaandra* came from the pen of Govardhan Ram (1855-1907). It is considered to be one of the great classics of modern India.

In the field of fiction we have the stalwart. K. M. Munshi. One should not forget the valuable contribution of Gandhiji who influenced Gujarati writers to write simple and direct prose as also Kaka Sahib Kalelkar who wrote in Gujarati, Hindi and Marathi with equal ease.

Coming to the contemporary period Gujarati flourished in all genres of literature, the most outstanding poets are Sundaram and Umasankar Joshi, novelists Pannalal Patel, (who annexed the Jnan Pith Award of 1985) and Shanshuklal Mehta. Among the playwrights, the names of C. C. Mehta, Umar Wadia and Shivkumar Joshi may be mentioned.

HINDI

The Hindi language comprises a number of dialects of which those used for literary composition are Khariboli, Rajasthani, Maithili, Brajbhasha and Awadhi. Khariboli has become the chief literary medium only by the 19th century. The early period of Hindi literature which is called *Adikala* is accepted as the period upto mid-14th century.

The main groups of trend-setters in this period were: (i) the Siddhas, (ii) the Jain Poets, (iii) the Nathapanthis and (iv) the heroic poets. The Siddhas belonged to the later Buddhistic cult called *Vajrayana*. The *Nathapanthis* adhered to a cult in which *Hatha yoga* was practised. The works of heroic poets are generally known as *Rasau* poems (derived from *rasa*, a style of verse-biography which was also sung).

The second period which consists of the centuries (mid-14th to mid-17th century) is dominated by devotional poetry (*Bhakti-Kavyas*). The Hindi *bhakti* poetry consists of two streams: (i) *Nirguna* — the poets who believed in a formless God or abstract name: (ii) *Saguna* — the poets who believed in singing and writing about a God with attributes (human incarnation like Rama in particular).

Kabir (1398-1518) is the most important poet in the Nirguna school. He preached universal religion of man above and beyond Hindu or Muslim orthodoxy and compared a large number of songs and poems. Guru Nanak (1469-1538), the founder of Sikhism, is also accepted as an outstanding poet of this school.

Bharatendu Harischandra was the pioneer who ushered in the modern period of Hindi literature. He deliberately made Khariboli the medium for his prose and dramatic writings.

The *Saguna* stream is related to Vaishnava poets who belong to two categories, those worshipping Krishna and those worshipping Rama. Surdasa whose poems have been compiled under the title *Surasagara* was a great poet of Krishna poetry. Vidyapati claimed by Bengali and Maithili was a versatile composer of Hindi poems also.

The great champion of Rama poetry is Tulasidas (1543-1623) whose *Ramacharitamanasa* is considered an immortal classic by all lovers of Hindi poetry. He has command over all the important styles of composition — narrative, epic style, lyrical and dialectic. He has given a human character to Rama, portraying him as an ideal son, husband, brother, king and so on. Tulasidas considered Siva and Vishnu as two aspects of the same supreme being and this brought about unity among the Hindus.

The third period is spoken of as the *Ritikavyakal*. It is also referred to as the *Ritisrngara* Kavya. Though literally the word *riti* means 'a way of writing poetry' in Hindi it refers to a special form in which the erotic element is preponderant. The riti can either be explicit or implicit. Hindi is very rich in both these categories of poetry. During the same period Hindi has also a good collection of Devotional poetry and Historic poetry. In the *Bhakti* period there were many epics and long narrative poems composed in the dialects of Hindi (Awadhi, Braji bhasha etc.).

The modern period of Hindi literature commences with the second half of the 19th century. Bharatendu Harischandra (1850-84) was the pioneer who ushered in the modern era. He deliberately made Khariboli the medium for his prose and dramatic writings. But, for poetic composition he used Brajbhasha.

Other important writers of this formative period are Maithili Saran Gupta (1886-1964), R. N. Tripathi (1889-1962) and Gopala Sarana Sinha (1891-1960). Maithili Saran revived the epic tradition. Far-reaching events in the national and international spheres had their effect on Hindi literature. The romantic upsurge spoken of as Chaya vada is an important element of the period.

Jayashankar Prasad, Surya Kant Tripathi, 'Nirala' and Sumitra Nandan Pant are the leading luminaries of the movement. Kamayani by Jayashankar published in 1936 is hailed as a magnum opus. It is the psycho-biological joining of a man through time and space.

In the second phase of the modern period, which is referred to as the *Dwivedi yug*, the leading figure obviously was Mahavir Prasad Dwivedi. Poetry, Drama, Novel, Short story and the Essay flourished on account of western impact. Drama in Hindi has a long history from the 14th century. But the prose drama developed only towards the close of the 19th century.

Bharatendu and Jayashankar Prasad have written quite a few plays. In the field of fiction, the great stalwart no doubt is Premchand. His novel *Godan* has been translated into many languages, Indian and foreign. Other important novelists of the contemporary period are Jainendra Kumar, Phaneswar Nath Renu, (*Maila Anchal*) and Satchidananda Vatsyayan.

KANNADA

Kannada has a long history of literature next only to Sanskrit and Tamil. Though Dravidian in its origin, Kannada has been considerably influenced by Sanskrit and even the early literature bears witness to this phenomenon. According to some scholars the language flowered into literature as early as the 5th century AD. Nripatunga of the late 9th century refers in his work Kavirajamarga to a number of predecessors who wrote prose and verse. There were also important works on grammar and rhetoric. Though Sanskrit had a hold on the people as a religious and fashionable language, Nripatunga voiced the glories of his mother tongue

Works based on or inspired by Sanskrit epics such as the *Mahabharata* and the *Ramayana* formed the earliest literature in Kannada. The three gems of early Kannada poetry, Pampa, Ranna and Ponna (all born in the 10th century), rendered the epics in Kannada. The early writers were also promoters of the Champu style and some of them have written about Jaina Tirthamkaras.

Kasiraja's *Sabdamari darpana* (C 1260 AD) is the first standard grammar of the Kannada language. Nagavarma II has written three works on language, literature and grammar, viz. *Kavyalokana, Bhasha bhushana* (in Sanskrit) and *Vastukosha,* a Sanskrit-Kannada glossary.

A great change took place in Kannada literature when Basaveswara (12th century) introduced the *Vachana* style of writing which caused a social revolution. *Vachanas,* or sayings, are simple in style, prose in construction, with a sort of rhyme, but pithy and proverb-like. The imagery belongs to the daily life of the ordinary man. This was imitated by other writers not only in Kannada, but in Telugu as well. Dignity of labour and equality of all members of the society were the cardinal points of the Basaveswara movement.

Kannada has a long history of literature next of only to Sanskrit and Tamil. Though Dravidian in its origin, Kannada has been considerably influenced and thereby enriched by Sanskrit.

Lapierre's Gift to 'City of Joy'

The French writer Domnique Lapierre has decided to donate half the royalty from the sale of his latest book "The City Of Joy to improve the slums of Calcutta.

Mr. Lapierre, author of many books including "Freedom At Midnight", says half the royalty in 1986 alone would work out to Rs. 40 Lakhs as the book had been published in 37 languages.

"The City Of Joy" is a poignant account of life in a Calcutta slum and of the ultimate triumph of the human will.

Mr. Lapierre, had spend nearly two years in Calcutta to write the book.

Wants the royalty to "benefit all those men and women and children whose heroism I was previleged to discover during my stay with them".

Other important poets of the era are Harihara Raghavanka, Rudra Bhatta and Janna. Kumara Vyasa (15th century) comes a little later. His epic *Bharatakathamanjari* is very well known. Actually Pampa and Kumara Vyasa are the giant genius figures in Kannada literature. We may also mention in passing the names of three more great poets. Lakshmisa (C. 1550), Sarvajna (C. 1600) and Sankaradeva (C. 1655). Jains, Virasaivas and Brahmanas have produced works on their respective religious and on various secular themes.

After a less fertile interregnum, we come to the period of Renaissance and the Independence era. Two trends are witnessed during this period almost simultaneously, the absorption of western ideas and a patriotic rediscovery of the past. Historians divide the modern period as follows: (i) 1850-1920: the period of cultural awakening: (ii) 1920-50: the period of great political struggle and also a reaction to it in the form of social realism (iii) 1950-70: the period of disillusionment and of experimentation, (iv) 1970 onwards: the transitional period of political uncertainties.

The great writers of cultural awakening are B.M. Srikantaiah (1884-1946) and M. Govinda Pai (1883-1963). Srikantaiah's *English Gitagalu* marks a turning point in verse composition. The poets of stature who followed are K.V. Puttappa (b. 1904) whose *Ramayanadarsanam* has been acknowledged as a modern classic and D.R. Bendre (1896), a great lyricist, Both of them have annexed the Jnanpith Award.

Two novelists who won the same award are Masti Venkatesh Iyengar (1891-1986) and K. Sivaram Karanth (b. 1902), Masti is considered the father of Kannada short story. Among the modern dramatists the tall figures are Adya Rangcharya and T.P. Kailasam.

Kashmiri has a fairly long tradition of poetic compositions but its prose is very recent. Kashmiri script is such that printing is very difficult and this has to some extent retarded the progress of prose.

One notable thing as far as modern Kannada literature is concerned is that there are quite a few writers who have made a mark in more than one field: A.N. Krishna Rao (Poet and novelist), V.K. Gokak (poet and novelist), Gopalakrishna Adiga (poet and essayist) and R.S. Mugali (poet and historian). Kannada is flourishing in almost all branches of literature.

KASHMIRI

Kashmiri separated from the parental *Apabhramsa* stock around the 10th century AD. By oral tradition the language has transmitted a good deal of folk items. Sanskrit flourished along with the prakrit of the area. Some historians consider the *Brihatkatha* in Sanskrit as an adaptation made from the mother tongue of Kashmiris.

The beginnings of Kashmiri poetry is an extension of the Saiva texts in Sanskrit like *Tantrasara* (11th century) by Abhinava Gupta. The Saiva siddhas wanted to propagate their views and beliefs. During the 14th century two different religious traditions came face to face in Kashmir. By that time *Saiva darsana* had assimilated Buddhist as well as Vaishnavistic strands in it.

The tradition of Islamic faith from central Asian areas also came to Kashmir by that time. Nanda Rishi, the great poet was a product of this blended religio-cultural heritage. Persian continued as the official language for over 600 years. Consequently Kashmiri was cultivated only as the medium of low-brow expression. Later in point of time, Urdu poetry exerted its own influence on Kashmiri.

The following technical terms, for literary genres in Kashmiri will indicate the nature of influence on Kashmiri verse: 1. *Vak* (from Sanskrit) is a metrical utterance with a spiritual content. 2. *S'ruk* (from Sanskrit *sloka)* is akin to *vak* applied to the Sufistic context. 3. *Paband* (from Sanskrit *Prabandha)* is a cantoed composition. 4. *Vatsun* (from Sanskrit vacana) is song with a refrain.

There are five varieties of *Vatsun*. 5. *Masnavi* taken from the Persian tradition is a couplet form with rhyme. It is either a praise of God or a panegyric addressed to a royal patron. In addition we have *Lila, Pad, Dastan, Marsi* and Ghasal showing the many varieties of verse composition. This fertile period from 1200 to 1900 AD is usually divided into 5 phases.

In the beginning of the modern period the pioneering poet was Mahjun (1885-1952). His ghazals are well known. Zinda Kaul Mastergi (1886-1966) is another outstanding poet of modern Kashmir. The influence of the west is clear in later periods. This is particularly so when drama and prose literature are taken up for consideration. Kashmiri has a fairly *long* tradition of poetic compositions, but its prose is very recent.

Urdu is the official language of the state of Jammu & Kashmir and the educated people cultivated competence in that language Kashmiri fiction originated with the progressive movement of the Forties. And important writers, like Akhtar Mohi-Ud Din (b. 1928), Mohammed Amin Kamil (b. 1924) and Ali Mohammad Lone (b. 1926) actually switched over from Urdu to Kashmiri. The script used by Kashmiri is such that printing is made difficult. This has to some extent retarded the progress of prose-writings and its popularisation.

MALAYALAM

The early period of Malayalam literature consists of a triple stream. (i) The Pacha-Malayalam stream, by which we mean literary expression in pure Malayalam without any admixture, (ii) The Tamil stream and (iii) the Sanskrit stream. The first stream consists of ballads and folk-songs, which are difficult to date. Songs connected with religious rites such as *Bhadrakali pattu, Thiyyattu pattu, Sastrakali Tottam pattu,* and later in point of time, *'Margamkalippattu'* are important varieties. Then we have festival songs like *Onappattu* and *Krishipattu* and ballads of North Malabar and South Malabar.

The missionaries tried to popularise colloquial idiom in Malayalam. Poetry got a new dimension (lyrics), odes., etc.) and prose got new literary geners. Western influence reflects in creative writing.

In the Tamil stream (pattu school) the most outstanding work is *Ramacharitam* (12th century AD) composed in a language which is a mixture of Tamil and Malayalam. The mixing happens in the area of grammar as well. The author is one Chiraman and only *Yuddhakanda* has been taken up by the poet. After this magnificent long poem, we have the works of Niranam poets, *Kannasa Ramayanam, Bhagavad Gita* and *Bharatamala.* As compared to *Ramacharitam* the Tamil influence in these works is much less, The Niranam poets (Kannassan group) were great scholars and literary luminaries.

Sanskrit language and literature had a predominant influence on the native language of Kerala. It has resulted in a peculiar variety of literary dialect called *Manipravalam* and hence this stream is also referred to by this name. *Lilatilakam* (14th century) is the earliest book dealing with certain aspects of Malayalam grammar devoting most of its space to the grammar and rhetoric of Manipravala compositions. Such compositions come under two main literary forms, *Sandesha Kavyas* and *Champus.*

Among the many *Sandesha* (message) poems, the most outstanding is *Unnunilisandesam* (14th cent) whose authorship is unknown The most well known early Champus are *Unniyaticharitam* and *Unnichirutevi charitam.* The three streams were influencing each other and by about the 15th century, we have a great poem titled *Krishnagatha* composed in a blended dignified style, neither too high-brow nor too low-brow. Cheruseri Nambudiri is the author of this long poem on Krishna. Throughout the whole range of Malayalam literature there is no personality who could come anywhere near Ezhuthachan (16th Century) in the grandeur of poetic quality. His *Adhyatma Ramayanam, Bharatam* and *Bhagawatam* are the greatest classics in the Malayalam language. *Kilippattu* is the name given to the form of verse he has made popular. The *Pattu* (song) of the *Kili* means parrot song and in this literary form Ezhuthachan has made use of a style which has not the standard for all time. His Ramayana and *Mahabharata* are great *Bhakti* poems in the language. Till about the 18th Cent. *Kilippattu, Champu* and *Sandesha* kavya compositions have been produced by many a poet in Kerala.

Coming to the 18th cent we have *Attakkatha* and *Thullal* compositions which have enriched Malayalam verse in a significant way. *Attakkatha* is the literature form used for the well known *Kathakali* performance. *Ramanattam* by Kottarakkara Thampuran is the first full-fledged *Attakkatha.* The great masters of this literary form are Kottayathu Thampuran *(Bakavadham, Kalakeyavadham etc.)* Unnayi Variyer *(Nalacharitam - four days)* and Erayimman Thampi *(Uttaraswayamvaram, Dakshayagam etc.)*

Thullal is a more popular art-form and it has a considerable amount of good literature. This branch of literature is associated with the name of Kunchan Nambiyar who is its

INDIAN WRITING IN ENGLISH

Though foreign in its origin, English has been adopted in India as a language of education and literary expression besides being an important medium of communication on a vast scale. Its history in India commences with Ram Mohan Roy's (1774-1833) campaign for introducing scientific education in India through the English medium.

He could use the English language effectively though he learnt it only after he was 16 years of age. But when Vivekananda spoke and wrote in English, Americans described him as a 'perfect master of the English language'.

Among those whose writings in prose were considered as literature the name of Jawaharlal Nehru (1889-1964) stands out. He is particularly remembered for his Glimpses of World History, Discovery of India and An Autobiography (1936).

Gandhiji is reported to have cultivated English carefully and prayerfully. The language became a sharp and strong instrument in his hands. His precision, economy and clarity in the use of English is unequalled. Nirad Choudhuri (b. 1897) is an internationally accepted writer of English. His Autobiography of an Unknown Indian (1951) is particularly well known.

We have the extraordinary girl Toru Dutt (1955-76) who died at 21 leaving some fine poems, and then we have Sarojini Naidu (1879-1949) whose romanticism charmed readers in India and Europe. Her Golden Threshold (1905), The Broken Wing (1917), and the Sceptered Flute (1946) are well known

Aurobindo (1872-1950) who had his education in Cambridge mastered not only English, Greek and Latin but also French and Italian. No doubt he had his grounding in Bengali and Sanskrit. He was poet, philosopher and sage. For him poetry was a mode of meditation, a dhyanamantra. His epic, Savitri, is outstanding. His Life Divine (2 vol.) is equally outstanding from another angle.

Tagore has written poems in English also. Gitanjali in English is his own free rendering of his poems in Bengali. The lyrical quality of Gitanjali is universally accepted.

During the contemporary period, we have quite a few Indians, who write poetry in English. The more well known among them are Dom Moraes (A Beginning), Nissim Ezekiel (The Unfurnished Man), P. Lal, A. K. Ramanujan (whose translations of Tamil classics are internationally known), Kamala Das, Arunkolatkar and R. Parthasarathy.

In the field of Indian English novel the three senior writers who began to write in the early Thirties are Mulkraj Anand, R. K. Narayan and Raja Rao. British education and mode of writing had a tremendous impact on the writings of Anand (b. 1905). His major novels Coolie (1933), Untouchable (1935), Two Leaves and a Bud reveal his concern for the underprivileged in India.

R. K. Narayan has projected 'Malgudi' as the locale for most of his stories. He has a keen eye for the comic in the life around him. Swami and His Friends (1935), Bachelor of Arts (1937), The Financial Expert (1952) and The Guide (1959) and Waiting for the Mahatma (1955) are his popular novels. Raja Rao (b. 1909) has written only four novels, but he has felt the pulse of India better than others. 'Kanthapura' (1938), The Serpent and the Rope (1960) and The Cat and Shakespeare (1965) are significant achievements.

Other novelists of repute are G. V. Desani, M. Ananthanarayanan, Bhabani Bhattacharya, Malgonkar, Arun Joshi, Kamala Markandaya, Anita Desai and Khushwant Singh. Most of these novelists have written good short stories also. As regards drama and the essay the contribution is not substantial. Among the critics and historians of literature one could recall the names of K. R. Sreenivasa Iyengar, C. D. Narasimhaiah and M. K. Naik unrivalled master. He has about 45 *Thullal* pieces to his credit. The puranic themes he selects for his compositions are but peg to hang his social criticism and his poetry brims with humour and satire. *Thullal* has great mass appeal.

Malayalam can claim to have a fairly long history of prose writings. *Arthasastra* has been adapted into Malayalam prose around the 13th cent. Then we have *Attaprakaram, Kramadeepika* and *Dutavakyam* assigned to the period between 14th and 17th Cent. *Varthamana pusthakam* by Paremmakal Thoma Kathanar is a travelogue written about a journey to Rome (1776-86) in simple Malayalam.

By mid - 19th cent. we have missionaries like Bailey and Gundert compiling dictionaries, writing grammars and arranging translation of the Bible in Malayalam. The missionaries tried to popularise the colloquial idiom. Towards the end of the century., western impact finds expression in creative writing. While poetry gets a new dimension (lyrics, odes, etc.) prose gets new literary genres established.

Marathi has a flourishing contemporary literature in every branch of verse and prose. Some of its plays have earned a reputation beyond the borders of Maharashtra during the last quarter of the century.

Poets and scholars like Keralavarma and Rajaraja varma paved the way for an abiding renaissance in literature. Chandu Menon's social novels (*Indulekha* and *Sarada)* and C.V. Raman Pillai's historical novels *(Marthanda Varma, Ramaraja Bahadur and Dharmaraja)* are considered outstanding classics in the language. The contribution of the great-trio Kumaran Asan, Vallathol Narayana Menon and Ulloor S. Parameswara Iyyer - have enriched Malayalam literature with their writings in verse and prose.

Coming down to modern times we have poets like G. Sankara Kurup and Changampuzha, Vailoppilli Sreedhara Menon, N.V. Krishna Warrier, ONV Kurup, Vayalar, etc., fiction writers like Kesavadev, Thakazhi, Muhammed Basheer, Ponkunnam Varki, S.K. Pottekkad, P.C. Kuttikrishnan, Karoor, Kovoor and M.T. Vasudevan Nair, Playwrights like E.V. Krishna Pillai, N. Krishna Pillai, Thoppil Bhasi & T.N. Gopinathan Nair and critics like P.K. Narayana Pillai, Kuttikrishnan Marar, M.P. Paul and Mundassery and lots of others in all branches of literature too numerous to mention.

MARATHI

Marathi language was derived from Maharashtri- *Apabhramsa.* The history of Marathi literature can be divided into six periods.

1. The Yadav period 1189-1320 AD. 2. The Bahamani period 1320-1600 AD. 3. The Maratha period 1600-1700 AD. 4. The Peshwa period 1700-1850 AD. 5. The British period 1850-1947 AD. 6. Contemporary period 1947-

During the first two periods, Marathi literary genius occupied itself chiefly with religious and philosophical exposition chiefly in verse. *Vivek Sindhu* (Sea of philosophy) by Mukundaraj, a yogi of 'Natha Pantha' is accepted as the first major work. The origin of Marathi prose is also to be found in the Yadav period. The credit for it goes to another religious sect called the 'Mahanubhavas'. They eschewed Sanskrit deliberately and made Marathi a vehicle for the propagation of religion and culture. However, the influence of Sanskrit is seen in the acceptance of literary forms and theories.

An extremely effective revolt against Hindu orthodoxy came from Jnanadeva. *Jnaneswari* (a commentary on *Bhagawat Gita* and *Amritanuhava* (A Nectar of Experience) are his two masterpieces. Saintly singers sprang up in all castes and communities. Namdeva, who was a tailor became a disciple of Jnanadev (Jnaneswar). He became a great poet propagating a devotional cult called 'Warkari Panth'. Gardeners, Potters, Goldsmiths and such other people extolled 'Bhagawat Dharma' in acceptable verse.

In the Bahamani period, conversion to Islam took place on a mass scale. The flame of Hindu religion, however, was kept up with considerable zeal. The works of Eknath are to be specially remembered in this connection. He was a great saint and social reformer. His *Bhavartha Ramayana* brought the message of *Bhagawat cult* to the people with great power. Jainism too enriched Marathi in this age.

When we pass on to the third period, the most notable aspect is the contribution of Christian missionaries in Goa. Father Sephens (1549-1619) who came to India, studied Marathi language so well that he could compose charming verses in it. His *Kristapurana* is considered a classic on the model of *Jnaneswara*.

The dawn of 17th Century was most eventful in the political and literary history of Maharastra. Tukaram (1608-49), the greatest saint poet of the language, contributed in such measure to devotional poetry that he is remembered with great veneration even today. A *Sudra* by birth, he wrote 3000 *abhangas*. Their appeal is timeless. He is followed by Ramdas.

Coming to the Peshwa period, Krishnadayarnava and Shridhar are the leading poets. New literary forms were successfully experimented during the period and classical styles were revived, especially the *Mahakavya* and *Prabandha* forms. A period of transition follows in the first half of the 19th century. In 1818 Maharashtra lost its freedom to the British. Keshavsut, the father of modern Marathi poetry, published his first poem in 1885. The years in between witnessed a great change in the literary scene. In fact, modern Marathi literature took shape during this period.

The brightest star of modern Oriya literature is Fakir Mohan Senapathi. He was a poet, novelist, administrator, social reformer, printer, businessman and patriot all rolled into one.

As in other Indian languages, the Christian missionaries played an important role in the production of scientific dictionaries and grammars. Periodicals slowly became popular, starting with *Digdarsan* in 1840. About the same time *Darpan*, the daily newspaper, also came into being. Modern Marathi prose flourished though various new literary forms like the essay, the biography, the novel, the short story, the prose drama etc.

Chiplunkar's *Nibandhamala* (essays), N.C Kelkar's biographical writings, the novels of Hari Narayan Apte, Phadke and V.S. Khandekar, and plays of Mama Warerkar and Kirloskar are particularly worth noting. Apte's novel *Pan Lakshat Kon Gheto* which deals with the poignant experience of a child-widow has been translated into many Indian languages.

Similarly Khandekar's *Yayati* which has won for him the Jnanpith Award. Vijay Tendulkar and C.T. Dhanolkar have written and produced a good number of plays which have earned a reputation beyond the borders of Maharashtra during the last quarter of a century. Marathi has a flourishing contemporary literature in every branch of verse and prose.

ORIYA

Of all the North Indian languages, Oriya happens to be the least affected by Perso-Arabic influence and is nearest to the original Sanskrit. However, its literature sprouted in the language of the people expressing their dreams, thoughts and experiences. Though some scholars trace the origin of Oriya literature to the 9th Cent. AD, the language flowers into a regular stream of poetry only by the 13th century. In the initial four hundred years, we notice a reflection of different religious faiths, Buddhism, Shaivism, Shaktism and Vaishnavism (with twin branches of Rama cult and Krishna cult). We also find a considerable amount of folk items.

Sarala Das of the 14th century is the Vyasa of Orissa. Strangely enough, this semi-literate kisan became a leading poet of the language. His real name was Sidheswar Parida, but he adopted the name as he considered himself the Das (servant) of the deity, Sarala Devi. The quality and fervour of his devotion is exemplified in the manner in which he has adapted the *Mahabharata*. His *Vilanka Ramayan* and *Chandi Purana* are also well known. Sarala Das is followed by a group of scholar-poets who deliberately eschewed Sanskrit and wrote in simple Oriya to serve the masses. They are Balaram Das (Oriya *Ramayana* and *Mahabharata)* Jagannath Das *(Bhagawat Purana),* Anant Das, Yosowant Das and Achyutanand Das.

About the end of the 15th century and the beginning of the 16th, the influence of Chaitanya and Jayadev was dominant on Oriya literature. This continued in different ways for about three centuries. The philosophy of Chaitanya and the poetry of Jayadeva changed the pattern of versification in Oriya. Upendra Bhanj is the most outstanding poet of this new emphasis. For erotic description and play of words, Upendra is specially noted.

Vaishnavism propagated by the Chaitanya school produced welcome results in literature. The lyrical poet Baladev Rath, Deva Krushna Das and Bhaktacharan Das are other outstanding poets. Later in period of time we may remember the lyrical singer Gopal Krishna in the blind poet Bhima Bhoi.

Prose was practically born in the British Period, and it developed with amazing rapidity. Poetry found new ways of expression, and new themes covering political, social and patriotic sentiments were handled by poets, novelists and playwrights. In modern Oriya literature, the brightest star is Fakir Mohan Senapati (1843-1918). He was poet, novelist, administrator, social reformer, printer, businessman and patriot, all rolled into one. Strange to say, he had only two years' formal education.

He undertook literal translation of the *Ramayana* and the *Mahabharata* into Oriya. His *Galpa-Swalpa* (Collection of stories) and a novel *Chaman Atha Gunta* are particularly well known. This novel is a masterpiece of realistic fiction, depicting the victimisation of innocent weavers. Next to Senapathi comes poet Radhanath whose magnum opus is the epic *Mahayatra,* written in blank verse on Miltonic lines. Other distinguished poets of the modern period are Gopabandhu Das, Baikuntanath Patnaik, Kalindicharan Panigrahi, Mayadhar Mansinha and Guruprasad Mohanty. Panigrahi's *Matira Manisha* and Mohanty's *Amritara Santana* (Sons of Nectar) have been translated into other languages. Mohanty has specialized in dealing with tribal life. His *Mati Matala* (The Fertile Soil, 1964) has won the Jnanpith Award. Among the outstanding playwrights we may mention the names of Manoranjan Das, Bijaya Kumar Mishra and Biswijit Das.

PUNJABI

Punjabi emerged as an independent language in the 11th century from the souraseni Apabhramsa according to many scholars though Paisachi also has contributed to its development in the modern form. The rise of present day Punjabi has been parallel with the formation of the Gurumukhi script, evolved by the Sikh gurus.

Punjabi literature was the natural successor to Vedic and Arabic—Persian literatures and *Apabhramsa* literature which contained dramas, stories and narrative poems. Punjabi poetry dates back to the beginning of the 13th century when Baba Farid composed his *Sloks* and hymns. Though he was a Muslim mystic, he adopted the Indian literary tradition. Guru Nanak Period in Punjabi literature was a period of renaissance.

The golden period of Punjabi literature extends from the birth of Guru Nanak to the passing away of Guru Gobind Singh. Most of the religious poetries of this period is preserved in the 'Adigranth'.

The literature of pre-Nanak period can be linked to the tradition of the 'Gorak Panthis' who composed *sloks* and *padas.* Another poetic genre which was popular then is called *Var,* which sings the praise of great warriors and kings. Amir Khusrau (1253-1325) has composed a *Var* on Tuglak Sha.

The golden period of Punjabi literature extends from the birth of Guru Nanak (1469) to the passing away of Guru Gobind Singh (1708). Most of the religious and mystic poetry of this period is preserved in the *Adigranth* (the first book), a great anthology of *Bhakti* poems, which is considered a sacred scripture by the Sikhs. In it, a major portion of poetry is arranged in different *ragas* and is thus meant to be sung.

The tradition of *Sufi* and Quissa poetry had

Writers Restored

Boris Pasternak, the controversial winner of the Nobel literature prize of 1958, has been completely rehabilitated in the Soviet Union with the publication of his collected works in two volumes and an assessment of him as an 'outstanding Russian writer'.

Pasternack became a hero with his novel, "Doctor Zhivago", a vast panorama of a country undergoing the most radical revolution in history. It was the story of the personal struggle of one man for survival, and for that reason Pasternak was prevented by the Soviet authorities to travel to Stockholm to receive the Novbel prize.

The stories and novels of Fyodor Dostoyevsky, taboo during the 1966-1976 "Cultur Revolution", are again being studied i Chinese universities.

Study of the Russian writer's works resume as part of China's "opening to the outsid world", which began in 1979, Mr. Y Shuifu, president of the Soviet Literatur Research Society of China, said at the en of the society's national symposium o Dostoyevsky (1821-1881) the first of i kind since 1949.

Chinese versions of his most famous novel including "Crime and Punishment", 'Th Idiot', 'The Possessed', and "Brothe Karamazov" were first published 1920'

its influence of Punjabi poetry. Bulhe Shah and Waris Shah composed exquisite verses in the above genres. The best in Sanskrit literature was also imbibed through translation spread over 200 years (1600 to 1800) covering the two epics, the *Ramayana* and the *Mahabharata, Bhagavat Gita* and *Upanishads.*

The Indian tradition of 'Kaviya Sastra' and applied literary criticism is by and large the Sanskrit tradition which almost all the modern Indian languages have wholeheartedly adopted.

When we come to the modern age (1850-onwards) we have to remember first the contributions of Sir Attar Singh. The Ludhiana Christian Mission brought out a translation of the Bible in Punjabi in 1852, and a dictionary of Punjabi language in 1854. The Punjabi paper *Khalsa Samachar* was started from Amritsar.

A very important personality of Punjabi renaissance is Bhai Vir Singh (1872-1957). His religious epics, lyrics and nature poetry show clear signs of western influence. Puran Singh and Kripa Singh are his distinguished contemporaries. The leading poets of nationalism in Punjabi are Gurumuk Singh Musafir (1899-1964) and Hira Singh Dard (1889-1964). We have also literature of the progressive trend in ample measure both in poetry and prose. Among the outstandin modern poets mention may be made Mohan Singh (1905-78), Amrita Prita (b.1919) and Harbhajan Singh (b.1920).

Amrita Pritam has won the Jnanpith Awar Gurubaksh Singh Preet Lari, Harchara Singh, Sant Singh Sekhom and Gurdial Sing Khosla among playwrights, Bhai Vir Sing Nank Singh, SS Narula, K.S. Duggal and an Amrita Pritam among fiction writers ar noteworthy names in Punjabi.

SANSKRIT

The beginnings of Sanskrit literature ma be traced back to Rigvedic poetry (150 1200 BC) which can be regarded as religiou in character only in the widest sense of th term. Rigvedic poetry contains all th aspects which are found in a *kavya* by way themes and style. The Vedas compris sacred hymns, sacrificial formulae and quit a few hymns which are of secular characte

Literature that was produced in th periods that followed more and more i terested in ritual, religion and philosoph Yet in the *Brahmanas, Aranyakas* and in th

Upanishads there occur passages which are remarkable for their literary beauty.

Then there was a period commencing with the age of Panini (5th cent. BC) when books on ancillary sciences or vedangas were written. eg. Panini's *Ashtadhyayi*, Pingala's work on metres etc. In the third period of Sanskrit poetry known as the Classical period we have the epics, *Mahakavyas, Puranas, Narrative poems* (adulatory poems) and *Prasasti Kavyas, Sandesha Kavyas* (message poems). The two major epics, the *Mahabharata* of Vyasa and the *Ramayana* of Valmiki are outstanding creations of the Indian poetical genius. They have considerably influenced the life, culture and literature of all parts of India.

The theme of the *Mahabharata* (the biggest epic in the world) is the battle between the Kauravas and Pandavas on the plains of Kurukshetra (1000 BC). The *Bhagawadgita* is one of the many episodes in this epic. The *Ramayana* deals with the adventures of Rama in 24,000 couplets. *Brihatkathamanjiri* of Kshemendra and *Kathasaritsagara* of Somadeva are important *Katha* literature. *Panchatantra* is the oldest collection of fables in Sanskrit (4th Cent. AD)

The *mahakavyas* which according to accepted canons should contain majestic descriptions of war, nature and political intrigues are the pride of Sanskrit literature. Asvaghosha's *Buddhacharita* and *Soundarananda* are Buddhist *Mahakavyas*. *Kumarasambhava* of Kalidasa deals with the puranic story of the marriage of Parvati and Siva and the birth of Skanda. The poem opens with a scintillating description of the Himalayas.

Raghuvamsa is another *mahakavya* of Kalidasa where the poet is seen at his best. The later poets were guided more by the form than by the spirit behind the form. However, the greater among them are Bharavi (C 600), Bhatti (7th Century), Kumaradasa and Magha (c. 700)

Among the message poems it is *Meghaduta* by Kalidasa that has set the pattern. Of the other fifty message poems, the more well known are *Sukasandesa, Chatakasandesa* and *Hamsasandesa*. The *Harshacharita* and *Kadambari* (Bana) are justly regarded as the crowning achievements of Sanskrit prose fiction.

Sanskrit drama has a long history tracing back to Asvaghosha (2nd Century AD). Only fragments of his three plays are available. A century later we have Bhasa who is ascribed to have written 13 plays (discovered in Trivandrum). The conventions of Sanskrit drama are all observed by Bhasa. Kalidasa is the author of three outstanding plays *Malavikagnimitra, Abhijnana Sakuntala and Vikramorvasiya*. His treatment of the Sakuntala story in particular reveals him as a master of the dramatic art superior to all others in portraying the emotion of love. Sudraka is another important dramatist whose *Mricheha Katika* is well known. Of their successors in this literary form the more important are Visaghadatta, Harsha, Bhavabhuthi, Krishnamisra, Rajasekhara and Bodhayana.

Kautilya's 'Arthasastra' is the best product of politics and state-craft in Sanskrit. The mathematical treatises of 'Aryabhata' and 'Bhaskara' are also well-known.

There is also an abundance of philosophical and technical literature in Sanskrit. Of these 'Vedanta' was to exert the most profound effect cultivating in the writings of Sankara (AD 800) leading to further interpretation of Ramanuja and Madhava. In the sphere of domestic and social conduct there grew up a body of literature known as dharmasastra.

As regards politics and statecraft Kautilya's *Arthasastra* is well known. Equally known are the mathematical treatises of Aryabhata and Bhaskara and the medical books *Charakasamhita* and *Susruta*.

The Indian tradition of *Kavyasastra* and applied literary criticism is by and large the Sanskrit tradition which almost all the modern Indian languages have adopted from Sanskrit.

The great stalwarts Bharata, Dandin, Vamana, Ananda Vardhana, Kuntaka and Abhinavagupta - all belong to the period covering the dark ages of Europe. These theoreticians gave us valuable concepts like *rasa, guna, riti, vakrokti, dhwani, rasadhwani* and *aucitya.* Bharata's *Natyasastra* is the earliest treatise available on the subject.

Sanskrit continued to be a vehicle of literary expression even in the modern period, though it was less prolific not being a language of the ordinary people. *Mahakavyas* were composed on the Buddha, Christ, Sankaracharya and Narayana guru. There were also long poems on Mahatma Gandhi, Rajendra Prasad, Tagore, Jayadeva and Jawaharlal Nehru. Quite a few books have been translated from languages like Tamil, Telugu, Malayalam etc. into Sanskrit.

Influenced by the languages of the west and by the active modern Indian tongues, Sanskrit writers have written poems, biographies, novels and short stories in the contemporary period. Both in quality and quantity they may not compare favourably with similar writings in other Indian languages. But the Sanskrit Muse is kept alive by lovers of the language.

Mirza Qalich Beg was the most prolific and versatile writer Sind has produced. He has about 350 titles to his credit. His 'Zinat' is the first Sindhi novel of merit. 'Zinat' is the heroine's name.

SINDHI

The origin and ancestry of the Sindhi language are shrouded in disputable theories even today. Many scholars hold the view that Sindhi belongs to the ancient language of the Indus valley prior to the period of Sanskrit. Even in the matter of script, there has been considerable change. The new Perso-Arabic script was approved only in 1853.

The early poetry in Sindhi was based on local romantic tales. The early poems called Gahun were not recorded but handed down by word of mouth. Pir Sadruddin (1290-1409), an Islamic missionary, is considered the pioneer of Sindhi religious poetry.

The first great Sufi poet is Qazi Qazan (c. 1465-1551). His seven verses have been preserved. He was influenced by Bhakti Kavya movement of North India, second only to Qazan is Shah Karim (1537-1623) whose verses are imbued with mystic thought.

What is important to note in the early Sindhi poetry is the fusion of the Islamic and Hindu thoughts and beliefs. Along with Qazan another major poet Miyun Shah Inat (1625-1713) has composed poems in the classical idiom, yet heralding a new era in Sindhi poetry.

The premier poet of Sindhi, however, is Shah Abdul Latif Bhitai (1689-1752). His collection of poems titled Rasalo (Message, 1866) is an expression of high thoughts with great artistry. He provides a varied fare in his poems. We have also other important poets like Ruhal (1734-1804), Chain Rai Sami and Dalpat (1769-1841) who were Vedantists and others who wrote religious poetry of Hindus and Christians.

Coming to modern times, we have poets who followed the Persian poetical forms like *ghazals, quasidas, rubais* and *mathnavis.*

Among them the most important are Gul Mohamad, Muhammad Qasim, Muhamad Fazil Shah, Hafiz Hamid and Qalich Beg. Freedom movement came to Sind soon after the partition of Bengal. Lalchand Amardinomal was the champion of the national movement among the writers. Poets and prose writers gave expression to nationalism and progressivism as in other Indian languages.

Mirza Qalich Beg (1853-1929) was the most prolific and versatile writer Sind has produced. He has about 350 titles to his credit, originals and translations. His *Zinat*(Heroine's name, 1890) is the first Sindhi novel of merit Other important novelists are Lalchand, Amardinomal, Bherumal Meharchand, Ram Panjawani, Gobind Malhi, L.H. Ajwani and Krishna Khatwani.

TAMIL

Tamil language has the special claim of being at once classical like Sanskrit, Greek or Latin and vigorous and modern like the modern Indian languages. Its history can be traced up to the age of *Tholkappiyam* the earliest extant Tamil grammar generally ascribed to 500 BC. Among the Dravidian languages it is least influenced by Sanskrit, though the influence is beyond question.

The earliest extant literature of the Tamils is called Sangam literature and it is dated between 500 BC and 200 AD. Though a considerable part of the early poetry has been lost, some of the bards and patrons decided to preserve a part of it in certain anthologies (about 4th century AD). These are the ten Idylls (*Patirruppattu*) and the eight anthologies (*Ettuthohai*). Four hundred and seventy three poets, of whom thirty are women, have been identified. These are mainly classified into two, *Akam* or esoteric dealing with love and *Puram* or exoteric dealing with war.

In this period, Tamil literature was considerably bound by literary conventions. The poets were keen on keeping up the tradition. The land was treated as five regions viz. mountains, forests, fields, coasts and deserts and the theme of love in five aspects viz. union, patience, sulking, wailing and separation. The poet dealing with a certain aspect of love restricted himself to a particular region, season, hour, flora and fauna. These literary conventions are explained in *Tolkappiyam.*

Subramania Bharati is the greatest poet of modern Tamil. His patriotic poems have inspired thousands of readers in his time. Personal freedom, national liberty and fundamental equality are his theme.

Purananuru is 400 verses on Puram themes. It serves as a window on the Tamil people 2000 years ago. *Agananuru* is 400 poems on love themes. The length of these poems varies from 13 to 37 lines. There are other collections like *Natrinai, Kuruntogai, Ain-kurunuru,Paripadal etc. which are quite well known.*

Tiruvelluvar's Tirukkural is acclaimed to be the greatest Tamil classic. It expresses the most profound thoughts on the many problems of life. Each verse is a couplet composed with great economy of words. The book is divided into 133 chapters each containing 10 verses. The chapters are arranged in three books dealing with virtue, wealth and pleasure.

Round about the 3rd century AD, Tamil has produced two epics *Silappadhikaram* and *Manimekhalai* which are considered twin epics like the *Ramayana* and *Mahabharata.* The author of *Silappadhikaram* was the son of a Chera King Elamko Adikal. The title means the 'Story of the Anklet' and the epic describes the moving story of Kannagi.

Manimekhalai is the daughter of Madhavi and Kovalan, the hero of *Silappadhikaram. Kamba Ramayanam* is an immortal classic in Tamil. Though Kambar based his work on the Sanskrit *Ramayana* of Valmiki, his rendering shows that he was a supreme artist. It is different in plot, in construction and in the delineation of character. *Kambaramayanam* runs to 10,368 verses.

Tamil is rich in devotional literature. Nayanmars are the exponents of Saivism and Alwars that of Vaishnavism. Thirujnana Sambandar, Thirunanukkarasar, Sundarar and Manickavasagar are the four great Nayanmars. The great Alwars are 12 in number. Kulasekhara Alwar and Andal are specially remembered. There are 5 major *kavyams* and 5 minor *kavyams* in Tamil. Jain and Buddhist works are in abundance in the language.

Coming to the period between 13th & 18th centuries, we notice the Muslim and Christian impact on Tamil literature. Umaru pulavar has composed a long poem of 5000 verses on the life of prophet Muhammed. The Christian influence began with the Portuguese and continued with the Danes, the Dutch, the French and the British. Beschi, Caldwell, Winslow and Pope have made significant contributions to Tamil. The Italian priest Beschi (1680-1747) composed the magnificent poetical work *Tembavani.* (The Insatiable Beauty) on the life of St. Joseph. Vedanayagam Pillai and Krishnan Pillai are two other Christian poets.

Twentieth century has produced many talented men of letters in various fields, Poetry, Prose, Drama, Novel, Biography, Short Story etc. Dr. Swaminatha Iyer unearthed may literary works and edited them. Swami Vadachalam, Thiru V. Kalyanasundera Mudaliar and V.O. Chidambaram Pillai are great writers of the modern period. However, the greatest poet of modern Tamil is Subramania Bharati whose patriotic poems have inspired thousands of readers in his time. Personal freedom, national liberty and the fundamental equality of all men find eloquent expression in his verses.

Rajam Ayyar, Madhavayya, Pudumaipithan, Ku-pa Rajagopalan and Kalki Krishnamoorthy have contributed much to the field of Tamil fiction. These writers along with Bharati ushered in the new epoch of Renaissance in Tamil literature.

TELUGU

Among the Dravidian languages, Telugu exhibits the greatest influence of Sanskrit. Telugu literature is generally divided into six periods. 1. The Pre-Nannaya period (upto 1020 AD) 2. The age of the Puranas (1020-1400). 3. The age of Srinatha (1400-1510). 4. The age of the Prabandhas (1510-1600). 5. The Southern period (1600-1820) and 6. The Modern period.

In the earliest period there are only inscriptions from AD 575 onwards. Nannaya's (1022-1063) translation of the Sanskrit *Mahabharata* in Telugu is the first piece of Telugu literature as yet discovered. The diction is so masterly that historians think that there must have been earlier works in Telugu. After the death of Nannaya there was a kind of social and religious revolution in the Telugu country.

Virasaivism propagated *bhakti* towards Siva as the only means of attaining salvation. Tikkana (13th Cent) and Errana (14th Cent) continued the translation of the *Mahabharata* started by Nannaya. *Errana* was also a devotee of Siva. Quite a few poets continued writing in Telugu and we come to the age of Srinatha.

During this period some Telugu poets translated Sanskrit poems and dramas while others attempted original narrative poems. The popular Telugu literary form called the *Prabandha* evolved during this period. Srinatha (1365-1441) is the foremost poet who popularised this style of composition (a story in verse having a tight metrical scheme). Srinatha's *Naishadham* is particularly well known.

The father of modern Telugu literature is K. Viresalingam Pantulu who worte a novel 'Rajashekhara Charithamu', inspired by the 'Vicar of Wakefield'. His goal was erradicate social evils.

We may also refer to the *Ramayana* poets. The earliest *Ramayana* in Telugu is generally known as *Ranganatha Ramayana* though authored by Gona Buddha Reddi. Then there are the great religious poets like Potana (1450-1510), Jakkana (second half of 14th Century) and Gaurana (first half of 15th

'The Mousetrap' 33 Years Old

Uncallenged as the world's longest-running play, Agatha Christie's "The Mousetrap" completed 33 years on last year with a glittering party and the final curtain nowhere is sight.

"It will last out my lifetime", said producer Peter Saunder, 73, "I will never take it off the stage. I would like to be there till it's last night, but I don't think I'll live that long".

So Saunders, who risked staging a play that the late Agatha Christie thought might run six month, is making the most of every "Mousetrap" anniversary.

A party on Tuesday, before the 13,868th consecutive performance in London, with Princess Michel of Kent speaking to 1,000 celebrity guest, marked 33 year and four months—one-third of a century—since the play's politely received first night on November 25, 1952.

century).

The golden period of Telugu literature is the 16th and 17th centuries. Krishna Deva Raya's *Amukta Malayada* is regarded as a Mahakavya. Peddana's Manucharita is another outstanding Mahakavya. Telugu literature flourished in the South in areas like Madurai, Thanjavoor etc. and that is why the age itself is called the 'Southern Period'. We find a comparatively larger number of poets among the rulers, women and non-Brahmans. They popularised the desi metres.

With the conquest of Deccan by the Moghuls, there was a period of decadence (1750-1850) in literature. Then emerges a period of transition (1850-1910) following a long period of Renaissance. European savants like C.P. Brown played an important role in the development of Telugu language and literature. In common with the rest of India, Telugu literature of this period was increasingly influenced by European forms like the novel, the short story, the prose drama, belles lettres etc.

Traditional Urdu poetry made considerable progress in the 18th century under the influence of what is called the Delhi School. With the verse of Ghalib the traditional poetry reached its pinnacle.

The father of modern Telugu literature is K. Viresalingam Pantulu (1848-1919) who wrote a novel, *Rajasekhara Charitamu* inspired by the *Vicar of Wakefield.* He was the first person in modern times to use literature to eradicate social evils. He was followed by Rayapraba Subba Rao, Gurajada Appa Rao, Viswanatha Satyanarayana, Katuri Venkateswara Rao, Joshua Devulippilli Krishna Sastri and others in the sphere of poetry. We also find the progressive movement, free verse movement and the *Digambara* style finding expression in Telugu verse. The well known modern Telugu novelists are Unnava Lakshminarayana (of *Malappalli* fame), Viswanatha Satyanarayana (*Veyipadagalu*), Kutumba Rao and Buchi Babu.

URDU

The grammatical structure of Urdu is based on Western Sauraseri Apabhramsa but its vocabulary, idioms and literary traditions drew heavily from Central Asia, Turkey and Persian sources. The literary flowering of Urdu does not go farther than the 13th Century. Urdu literature developed in the bazaar, the monastery and the *salons* and all these places had their own characteristic features.

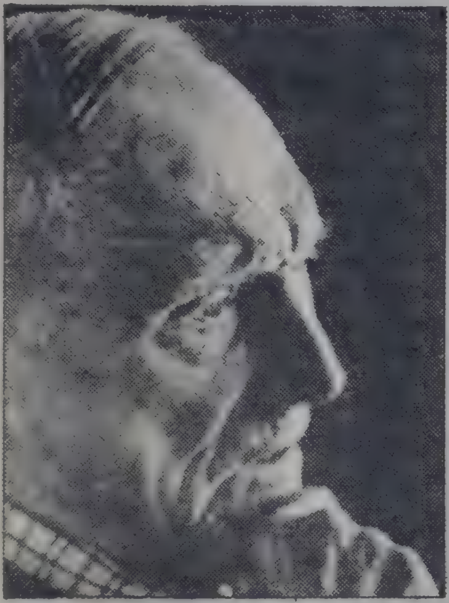
Traditional Urdu poetry comprises a few literary genres that have a definite history and development. They are the *masnavi* (every couplet has a different rhyme), ghazal (talking to the tender sex), qasida (a genre akin to the ode), marsia (elegiac poem), rekhti and nazm. The early stages of the development of Urdu was a two-pronged movement. 1. The saints and mystics made it a vehicle for the propagation of their unity and compromise. 2. The Hindu saints of the *Bhakti* movement under the Islamic influence encouraged the idea of oneness. The literary precedence of the South over the North can only be understood in the historical context.

Sultan Alauddin Khilji invaded the South during 1294–1311 AD. The cultural comingling was responsible for the production of good literature in the South. The earliest known writer in Deccani Urdu is Shaikh Ganjulilm (d. 1393). The next notable figure is Khwaja Banda Nawaz (1320–1422). His Miraj-ul Ashiqeen is a Sufistic treatise in prose. Other *masnavi* writers are Mukimi of Bijapur and Ahmed Ajis.

The Persian tradition has taken root in Urdu poetry in the 17th century. Mulla Wajhi is a great literary figure of this period. His *masnavi*, Qutab Mushatari (1609) and his rhyming prose allegory *Subras* (1634) are the gems of Urdu literature, produced in the Deccan. When the tradition of the *masnavi* spread to the North, the Deccani language yielded place to the Khadiboli or the Rekha or Urdu.

The *masnavi* now yielded place to the *ghazal,* which became the most popular form of Urdu poetry. Though ghazals were written by many poets like Amir Khusrao, Hazhim and Qutb Shah, Wali was the most outstanding. He gave a new dimension to the ghazal.

Poet Laureate Penn Warren



Now the United States also has a Poet-Laureate. Following the great English tradition, Robert Penn Warren, the 80 year old Poet, Novelist and Essayist was designated the first official Poet Laureate of the U.S. in March, 1986.

Mr. Warren, whose most famous novel 'All the King's Men', appeared 40 years ago, is the only writer to have won the Pulitzer prize for fiction and for poetry (twice). a man of letters in the manner of another age, who has written in almost every literary form, he neverthless said in 1983 that "poetry is where my heart is" - and he has devoted himself largely to poetry in the last decade.

Britain has had a poet laureate since the 17th century—John Dryden was the first. Some of the official bards turned out inspired work, but others have been viewed by posterity as self-important hacks.

The corresponding American poet laweate was established only last year in a law passed after years of lobbying by Sen. Park M. Matsunaga (D) of Hawaii. The law authorised adding the new title to that of consultant in poetry at the Library of Congress, a position that was created more than 50 years ago.

The list of English Poets Laureat is given below:

John Dryden (1631—1700); laureate (1668—88) Thomas Shadwell (1642—92; laureate 1688—92) Nahum Tate (1652—1715; laureate 1692—1715) Nicholas Rowe (1674—1618; laureate 1715—18) Laurence Eusden (1688—1730; laureate 1718—30) Colley Cibber (1671—1757; laureate 1730—57) William Whitehead (1715—85; laureate 1757—85). Appointed after Thomas Gray declined the offer) Thomas Warton (1728—90; laureate 1785—90) Henry James Pye (1745—1813; laureate 1890—1813) Robert Southey (1774—1843; laureate 1813—43) William Wordsworth (1770—1850; laureate 1843—50) Alfred Lord Tennyson (1809—92; laureate 1850—92) (Appointed after Samuel Russel declined the offer) Alfred Austin (1835—1913; laureate 1896—1913) Robert Bridges (1844—1930; laureate 1913—30) John Masefield (1878—1967; laureate 1930—67) Cecil Day-Lewis (1904—72; laureate 1968—72) Sir John Betjeman (1906—; laureate 1972-).

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Prominent American writers booed, hissed and interrupted the U.S. Secretary of State, Mr. George Shultz, as New York played host to the 48th Congress of the international writers group PEN early last year.

Mr. Shultz took the unfriendly reception in his stride and over the hisses, said in a welcoming speech, 'Don't be surprised that Ronald Reagan and I are on your side'.

PEN, founded in 1921 by the British writer, John Galsworthy, has spoken out against censorship and tired to help writers who have been jailed or presecuted by their governments, and the objections to Mr. Shulz was mainly because of the application of the McCarran-Walter immigration law, to keep some leftist writers out of the U.S.

death of Rama in beautiful Manipuri.

Modern Manipuri poetry is recent in the sense that it had to wait till the second decade of this century to get a form. *Le Paren* (Garland, 1929) by Kamal Singh is an outstanding work. A.D. Singha (1907-44) is a composer of epic poetry in Manipuri. His *Kamsa Badha* (1942) is a notable work. There are also experimental poems composed after 1947, interesting dramas, about a dozen readable novels and some short stories of worth in Manipuri.

NEPALI

The Nepali language belongs to the Indo-Aryan family. It has descended from the Khas prakrit. Nepali is fairly rich in folk literature. Its traditional poetry has come to shape only in the 18th Century. Subananda Das was one of the recognised poets of the early period. He was followed by Shakti Ballav Aryal and Udayanand Aryal.

Most of the writers of this period were well-versed in Sanskrit and hence Sanskrit patterns were approved for Nepali compositions. *Gopika Stuti* and *Srimad Bhagawat* were translated into Manipuri. Basant Sharma's *Krishna Charita* is regarded as the first *khandakavya*. Bhanubhakta translated *Adhyatma Ramayanam* into Nepali (1841-68), Motiram Bhatta, Lekhnath and Balakrishna Sama are important poets of the modern period.

Modern Rajasthani poetry was highly influenced by Western culture. The first book of modern poetry is 'Badit' by Chandra Singh. It describes the joys and sorrows of rain in the desert. 'Badit' means 'cloud'.

In Drama, Novel and Short Story, Nepali has claims for sizeable contributions. Among the playwrights the more important names are S. B. Aryal and Balakrishna Sarma, and among novelists Pratiman Lama, Rudraraj Pandey and Siva Kumar Rai. Paras Mani Pradhan is a good prose writer and researcher.

RAJASTHANI

Rajasthani is an Indo-Aryan language having its roots in Vedic Sanskrit and Sauraseni Prakrit. Its script is Devanagari. It has a fund of folk literature consisting of ballads, songs, proverbs, folk tales and panegyrics.

Historains have divided traditional poetry into two periods; the early period starting from 1050 AD and ending with 1450 and the second (medieval) period being from 1450 to 1850. Thereafter it is modern poetry. The early period abounds in Jain poetry. The richest period for poetry and prose compositions is the next period.

All the masterpieces of traditional poetry are products of this period. Besides a great many full—length poetic works dealing with wars, mythological events and devotional themes, several *Duhas* and *Gitas* (a kind of metre) have been composed on all kinds of subjects. Padmanabha, Vihu Sujo, Aluj are a few of the important composers.

Modern poetry starts from the Forties of this century. This reflects the impact of western culture. The first book of modern poetry is *Badit* (cloud) by Chandra Singh (b 1912). It describes the joys and sorrows of rain in the desert. N. R. Sanskartha, N. S. Bhatti, R. Kalpit and G. L. Vyas are important modern poets

Drama and novel have not flourished well in Rajasthani; but short stories (known as *vat*) are many and of a high standard. M. D. Vyas pioneered the modern short story with his *Varas ganth* (The Birth Day, 1956).

INDIAN MUSIC AND DANCE

In music and dance India can legitimately be proud of her past, a tradition dating back from the days of the 'Vedas'. They still continue to enrich the fabric of the diverse cultural milieu that forms modern India.

The music of India is one of the oldest and most sophisticated. Its origin is rather difficult to trace. There have been efforts by great minds to have a glimpse into the dim past, but not with very great success. There has been naturally more fancy and fantasy than any discovery of authentic facts. To an extent, it is established now that Indian Music had its origin in the Vedas where it found its moorings. As centuries rolled on it developed into an integrated well-codified form. Flavouring of music commenced with the folk idiom evolved in consonance with regional ingenuity, and slowly blossomed into classical forms. Though classical music in India differs from region to region, there is an underlying current of unity. Unity in diversity as they say.

There are two systems of music in India, the Carnatic and the Hindustani, which are highly grammatized. This is supplemented by folk music, bhajans and kirtans.

Carnatic concert: M.S. Subbulakshmi and party at a concert in Delhi.

Ragas. Raga is a melodic scheme covered with certain traditional rules, at the same time leaving enough freedom for improvisation. These rules determine and define the notes of a scale for each raga, their order, and their essence which give a particular colour to the scheme. The Melakarta embracing 72 ragas governs the Carnatic scheme. Based on this structure innumerable Janya ragas (derivative ragas) have blossomed. A raga should have a minimum of four notes to ensure a personality for it. Though in the earlier years of its evolution, Hindustani music did not have a Melakarta system. Later on due to the efforts of Shri Bhatkande, a streamlining has been done.

The basic character of Indian Music is its emphasis on melody. As melody is a movement of one-tone-at-a-time it naturally becomes progressions of sound patterns in a linear fashion. As a raga is basically an incipient melodic idea, it has perforce to be elaborated to bring forth its aesthetic potentialities. As a result, these formal constructions are either rhythmically bound or free. Also they assume slightly different colourings according to the genius of the masters and these are knwon as Gharaanas or Bhanis.

The basic character of Indian Music is its emphasis on melody. As melody is a movement of one-tone-at-a-time. It naturally becomes progressions of sound patterns in a lenier fashion.

The musical researchers have concluded that raga, as a concept and practice, matured by the fifth century A.D. If one digs into the past, one would find that it was in the Sama Veda, the seeds of raga were sown, as this was chanted in a descending manner with full seven notes.

A degree of difference exists in the approach to raga formation in the Hindustani and Carnatic systems. The Hindustani system has got a peculiar characteristic that it constantly emphasises the Vadi and Samvadi notes in a raga; all phrasings gravitate towards this. In simple terms Vadi and Samvadi are the two pivotal notes of a raga structure like the reins of a horse. The result is that a number of ragas can be created having the same notes and syntax by altering these centres of gravity. A Carnatic raga, on the other hand, has a way of distributing tonal emphasis thereby giving greater freedom to the musician in creating patterns. Also the Gamakas or graces are characteristically different.

The Hindustani system has its broad sweeps and glides and the Carnatic its almost coiled coil technique. And finally unlike the Carnatic system, Hindustani music is based on the 'time' theory. The morning ragas, the midday ones, the dusk varieties and of course the night and mid-night, not to mention the dawn. In Carnatic music, though there are indications in this regard, in concerts this rigour is not strictly adhered to. Like derivative ragas in the South, there are the Raginis in the Hindustani idiom. There is also an element of gender in Hindustani music. Raginis sport the female gender and of course Ragas the male.

Talas. Talas are rhythmic cyles. They have a universal unity. Two plus two cannot but be four. Indian music has got the most complicated variety of tala structures in the world. And this is specially so in Carnatic music where even fractions are harnessed. Inn the world everything is rhythmic, even the rattle of a train. But that would be linear rhythm. Only when there is a feeling of coming back to the origin a form is ensured, though repetitive or cyclic. Say, like the days of the week. Monday to Sunday and Monday again.

The fundamental units of the Indian rhythmic structure are three (thisram) four (Chathusram) five (Khandam) seven (misram) and nine (Sankeernam). On a closer look, it would be discernible that the last two are only mixtures of the second and third. Three + four and four + five. We may leave the vulgar fractions to the virtuosos. As talas are simple arithmetic, there cannot be any difference in the manner of their operations. But while in Hindustani music, the transit from the Vilambit stage (slow tempo) to the Dhrut (fast tempo) is without any strict sense of temporal proportions, in Carnatic music the duration values are definite. The Dhruta is double the Madhya (middle) which in turn is twice the Vilamba.

COMPOSITIONS

Prior to Thalapakkam Annamacharya, who evolved the Krithi pattern as in vogue today- Pallavi, Anupallavi and Charanam- Carnatic music had its own system. In Tamil Nadu saint composers like Arunagiri Nadhar, Muthu Thandavar, Manikavachagar and Thayumanavar had composed devotional canticles like Thirupugazh, Thevaram and Kirtaanas. As there was no system of notation obtaining then, these were learnt and mastered by the ear

It was Purandaradasa from Karnataka who not only gave shape and form to Carnatic music by perfecting the Krithi pattern but evolving a number of musical exercises in the form of Sanili, Jandai, Dhattu and Geetam. This gave structure to the idiom. It can therefore be said that it was *Purandaradasa* who gave a launching pad to *Thyagaraja, Syama Shastri and Muthuswami Dikshitar* to pour forth their devotion into music. This trinity finally emerged as the greatest contributors to the enrichment of Carnatic music. Thyagaraja sang in simple Telugu in praise of Rama who was his Ishta Devata. As he had a large number of disciples by his side always his compositions easily caught on and became popular.

It was Purandaradasa who gave launching pad to Thyagaraja, Syamashastri and Muthuswami Dikshitar. This trinity finally emerged as the greatest contributors to the enrichment of Karnatic music.

The unique feature of his compositions is that every song was the result of an inner inspirational urge, having for its background a personal experience or anecdote. He covered almost the entire range of ragas and more than that he covered a raga in his composition from various angles leaving very little elbow room for future composers. This must have prompted Dikshitar to adopt the Dhrupad system for doubling the pace of the stanzas in between to give a new look to his compositions. Syama Shastry sang in praise of Kamashki, the presiding deity at Kancheepuram. His compositions revealed his technical virtuosity in Carnatic music. While Thyagaraja's compositions can be learnt by listening, those of the other two in the trinity have to be learnt from a Guru.

There are also the Padams, Jhavelis and Kavadi Chindus to adorn the lighter side. The first two are the counterparts of the Thumris of the Hindustani style. They are erotic in content and have to be sung with emotion and a feeling for the lyrics.

Hindustani. Coming to the Hindustani idiom, the Dhrupad is the most ancient form of composition evolved by *Swami Haridas and Tansen.* The Swami lived some time at the end of the fifteenth century. He became a Sanyasi belonging to the yogic lineage of the Andhra Philosopher *Saint Nimbarka.* Bhakti was the keynote of his compositions. Tradition has it that *Baiju Bawra* and Tansen were his disciples. Tansen was born in the earlier part of the 16th century. Legend has it that he was the son of one Makarand Pande, and was named Ram Tanu and was christened Tanna Misra. He adorned the court of Akbar. He is credited with the creation of new ragas such as Miyan ki Malhar, Darbari Kannada and Miyaki Thodi. This idiom had gone into oblivion for long, but has now surfaced due to the efforts of the Daggar family. It has also caught on in the West in view of the robustness of the compositions.

The word *Khayal* of Persian origin means 'Imagination'. Though its origin is attributed to Amir Khusro to whom all untraceable things are traced, consensus of opinion is that it came into prominence due to the efforts of Sultan Mohammed Sharqui in the 15th century and became acceptable as a classical form from the time of Sadanand Nyamet Khan (18th century). Unlike the Dhrupad, it is more delicate and romantic. For in structure and technique, it has certain freedom not found in Dhrupad.

A Khayal need not start with an Allaap so necessary in a Dhrupad. It depends on the genius of the singer to beautify it, by giving each note its proper environment, gamakas and an inner sense of melodic proportion. There have been great names in this regard like Balakrishna Bua (Gwalior Gharana), Rahamat Khan (Gwalior Gharana), Natthan Khan (Agra Gharana), Fayyaz Khan (Agra Rangeela Gharana), Alladia Khan (Jaipur Gharana), Bhaskar Bua (Agra, Gwalior, Jaipur Gharanas), Abdul Karim Khan (Kirana Gharana), Abdul Walid Khan (Kirana Gharana).

Thumri. The Thumri is a very light form often bordering on the vulgarly sensuous. It is quite possibly associated with the Radha-Krishna Bhakti cult and harnessed in Kathak. It was very famous in the 19th century under the patronage of Wajid Ali Shah, who was interested in Bohemian pleasures. He was a generous patron whose court was adorned with dancers and music luminaries. *The Tarana* is a composition which does not use meaningful words. Its libretto is made of syllables like nadir, tome, tarana and yalali which are mnemonics of tabla and sitar strokes. Its parallel can be found in the Thillana of the Carnatic idiom.

The Ghazals, now very popular, are more famous for their erotic content. Mirza Ghalib can be called the father of this style and he did not mince words in describing its purpose. His philosophy was wine and women. It is now a commercial viable venture and draws far larger audiences than any other style of Hindustani music.

The above touches only the broad and fundamental aspects of the two main styles of Indian music.

INSTRUMENTS

The flute, Nadaswaram, Veena, Gootuvadhyam, Thavil, Mridangam, and the plain drum are some of the ancient instruments of music in India. The Sitar and the Tabla were late comers. The Sitar appears to have infiltrated from Persia and has assumed great popularity. Except the Veena which is neatly fretted, all other instruments are negotiated by the method of trial and error. Their handling depends on the ingenuity and dexterity of the player. The flute and the nadaswaram as also the shehnai are wind instruments; the Veena, gottuvadhyam, sitar and now the sarod from Afghanistan are stringed instruments: The drum varieties are percussion instruments.

One point must be clearly borne in mind, that Indian instrumental music is *basically vocal* in conception. This is more pronounced in Carnatic music where the artiste reproduces only the works of great masters on the instruments. The element of licence and improvisation occur in the Alapana or the free prelude. But there is a slight difference. In Hindustani music, instrumental scores do not rely on musical compositions with lyrics alone.

A musical phrasing based on a given rhythmic cycle is taken up for delineation and is processed in five stages namely, Aalaap (free prelude), Jhod and Jhala (chords), Gaat (the musical structure to be negotiated), the Vilambit (slow pace) and the Dhrut (fast tempo). Though there are separate musical scores for musical instruments, the emphasis is on the Gayaki Ang. That is, effort is made to be as faithful as possible to the vocal style. However, these days great maestros are trying to innovate an experiment on patterns unique to the instruments and bring out their potentialities.

Great masters are trying to innovate an experiment pattern unique to the instruments and bring out their potentialities. Pandit Ravishankar, Ali Akhbar Khan and Amjad Khan are instances in point.

Pandit Ravishankar, Ali Akbar Khan and *Amjad Ali Khan* are instances in point. Ravishankar has gone a step further and specialised in orchestration also. Not only that, he has also tried to effect a fusion between Indian and Western music. He has rubbed shoulders with *the Beatles*, the *Pop* and *Jazz* tribes. Only posterity will be able to decide the value and potentiality of this experiment. On the percussion side also there has been a lot of effort to achieve a common platform for drums of all types. *Zakir Hussein*, the young and ebullient son of the lustrious Allah Rakha has made much prog-ess in this direction. This effort clicked, as hythm has universal appeal and brooks no egional or international prejudices.

The violin, a totally western instrument has ad an intercaste marriage and joined the ndian Instruments fraternity. It was in the 9th century that the brother of Muthuswamy ikshitar, Baluswamy Dikshtar, introduced ne violin to India. Since then it has caught on nd become an indispensable adjunct to ndian music. In fact, it has eclipsed all other ndian instruments, in view of its portability, egotiability and range. It does not react vildly to the vagaries of weather, like its ndian counterparts and no wonder it is the nost sought after instrument, especially in ne South. Why south, one may ask.

In the North, the *Sarangi*, another stringed nstrument, has been in vogue for centuries. ut it has its inadequacies. It sports a lethora of vibrating strings which have to be etuned for every change of raga in a oncert. Added to this, it has to be operated y the knuckles instead of the fingertips. In ne circumstances, there cannot be pin-point recision in notes in the speedier utterances. n inexpert hands, it will be an instrument of ggression. Years of practice can only en-ble an artiste to achieve perfection. But its eauty lies in its rich tonal timbre that can urpass even the voice. It can stir the heart in ne Vilambit passages. So much so that in the kashwaani it is featured when any dignitary asses away. In the recent past the violin has tarted catching on in the north also. *V.C. Jog, nd Smt. N. Rajam* are two outstanding rtistes of this instrument.

Bharatanatyam is poetry in motion. It is a highly traditional and stylized dance form, crystalized in the cast-iron mould of Bhrata's technique that disallows new-fangled gimmicks.

There have been great maestros of violin nd there still are in the south. Starting from *ovinda Swamy Pillai,* there have been alwarts like *Dwaram Venkataswami Naidu, ysore T. Chowdiah, Rajamanickam Pillai* nd *Mayavaram Govindaraj Pillai.* Today the ounger set has achieved astounding perfec-on and professionalism almost eclipsing the d-timers. *Lalgudi Jayaraman, M.S. GopalaKrishnan, V.V. Subramaniam* are a few instances. Special mention must be made of the outstanding achievements of the young violin maestro *Prof. L. Subramaniam* who has not only mastered the Carnatic idiom but also the Hindustani and Western styles. In the last mentioned he is on par with the top rankers in the West. *Zubin Mehta,* when asked about his impressions of the Indian violinists, observed, 'Oh' yes, that young lad L. Subramaniam, is tops'.

The number of Carnatic musicians is too large to admit of detailed mention. But it would be worthwhile to mention a few great names. *Palghat Rama Bhagavatar, Ariyakudi Ramanuja Ayyangar, Mahanjapuram Vishwanatha Iyer, Madurai Mani Iyer, Chembai Vaidyanatha Bhagavatar, Palghat Mani Iyer, Palani Subbudu, Dakshinamoorthy Pillai. But the sole credit for making Carnatic music popular in the West should go to Smt. M.S. Subbalakshmi* who with her golden voice took the Western world by storm. More than that, she harnessed music as a vehicle of devotion and philanthropy. Indeed she realised the real purpose of music.

DANCE

Among the various dance forms in vogue in India are Bharatanatyam, Chakiarkoothu, Kathak, Kathakali, Krishnanattam, Kuchipudi, Manipuri, Mohiniattam, Odissi, Ottanthullal and Yakshagana. Besides, there are umpteen numbers of folk-dances peculiar to various regions and sub-cultures.

Bharata Natyam. Bharata Natyam is poetry in motion. Tracing its hoary origins in the Natya Shastra, written by the great sage, Bharata, it is a highly traditional and stylized dance form. Crystallized in the cast-iron mould of Bharata's technique, this art form glassily disallows new-fangled innovations or gimmicks except in repertoire and forms of presentation. Emerging far back in the labyrnthine twists of ancient history (as information for the date conscious 4000 B.C. is the ascribed date to the Natya Shastra), Bharatanatyam has been immortalized in successive generations, as much by the sinuous grace of great dancers as by the nimble fingers of renowned sculptors who have demonstrated the perfection of Bharata's technique in the flowing lines of temple sculptures.

Its *present* form was evolved by the Tanjore quartet namely Poniah Pillai and brothers. Earlier variedly known as Dasi attam and Sadir, it was practised by Devadasis of the South Indian temples. It went into disrepute due to economic and social conditions and it was Rukmini Devi who gave it new life, and respectability. Its format consists of Alarippu (invocation) jathi swaram (note combinations) Shabdam (notes and lyrics) Varnam (a combination of pure dance and abhinaya) lighter items like Padams and Javalis (all erotic) and finally the thillana (again pure dance). On par with Rukmini Devi, there was Bala Saraswati, the queen of Bharata Natyam.

Chakiarkoothu. This form is believed to have been introduced to Kerala by the early Aryan immigrants and is performed only by the members of the Chakiar castes. A highly orthodox type of entertainment, it can be strictly staged inside temples and witnessed by the Hindus of the higher castes. The theatre is known as Koothambalam. The story is recited in a quasi-dramatic style with emphasis on eloquent declarations with appropriately suggestive facial expressions and hand gestures. The only accompaniments are the cymbals and the drum known as the mizhavu, made of copper with a narrow mouth on which is stretched a piece of parchment.

Folk Dances of India vary according to the region and have no specific grammar. They fit in with the scheme of festivals in each region.

Kathak, which has roots in Katha, evolved out of the popularisation of Radha-Krishna legend. Jaipur, Lucknow and Benaras became centres of its practice. From dance it changed to rhythm and erotics.

Kathak. It has its root in Katha — story. band of story tellers who were attached temples in North India, narrated stories fro epics. Later, they added mime and gestur to their recitation. The next stage in i evolution came in the 15th and 16th centurie A.D. with the popularisation of the Radha Krishna legend. With the advent of th Muslim rule, it was taken out from th temples to the courts. Jaipur, Lucknow an Benares became the centres. While Jaipu gave predominance to pure dance wit emphasis on rhythm, the Lucknow on drifted into erotics.

Benaras also stuck to pure dance but provided for the sensuous aspect by delineating episodes from the Radha-Krishn legend. The patron king of the Lucknow styl was Wajid Ali Shah who spent extravagantl on art. The place of women in Kathak was o a different order. They were known as nach-walis who adorned the courts of the Mughals. Apart from this, they were used fo entertainment of the pleasure seeking rulers and their fawning toadies. Eventually they came to be categorised as women of easy virtue. The Kathak dance goes through a regular format mostly concentrating on rhythm, variously called Tatkar, Paltas, Thoras, Amad and Parans.

Binda Din Maharaj, Kalkadin, Aachan Maharaj, Gopi Krishna and Birju Maharaj are but a few maestros in this line.

Kathakali. Kathakali is the most refined, the most scientific and elaborately defined dance form of Kerala. As it is obtained today it is not more than 300 years old, but its roots can be traced back farther past. It is a very exciting art form demanding not only complete control of practically every fibre of the artiste's body, but also intense sensitivity of emotion.

The stories for *attakathas* (the verse text for a kathakali piece) are selected from epics and mythologies and are written in a highly anskritised verse form in Malayalam. The ictor does not speak, but expresses himself hrough highly complicated and scientifically ordained *mudras* and steps, closely following the text being sung from the background of the stage.

The domain of kathakali is peopled by superhumans, gods and demons, and animals who are presented in a larger than life format. What strikes the spectator first and most is the splendour of the costumes, ornaments, and facial make-up which transform the actor-dancer into a type rather than a particular character. A character can be identified by the colour it sports. A green-painted face stands for nobility, honour, valour and such higher qualities.

Mythological heroes like the Pandavas, King Nala and divine personages like Krishna and Indra wear this make-up. In characters who wear the *katti* make-up, the green on the face is broken by a red patch resembling an upward twirling moustache. This make-up is symbolic of high-born anti-heroes, who are demonic but worthy foes to the heroes. Examples are characters like Duryodhana, Ravana and so on.

Another character classification called *tadi* (beard) includes wearers of red, white and black beards — red worn by vicious and savage villains like Dussasana, Bakasura and so on, white by the pious giant monkey Hanuman, and black worn by aboriginal hunters and forest dwellers. The category called *kari* (black) has characters whose faces are painted in lamp black, mostly ogresses like Shurpanakha and Hidimba. In complete contrast is *minukku*, in which the face is painted in delicate flesh tones with yellow and red powder. They are the noble women, queens, princesses, mostly heroines like Damayanti, Sita and others

The vocabulary for the performer is only *hastamudras* (stylised hand gestures) facial gestures and *nritta*. Together with the exotic quality of the spectacle and the intricate *abhinaya* system and the rhetorical text rendered in classical style to the accompaniment of drums, a kathakali performance transports a spectator to an unworldy atmosphere peopled by gods, demons and other superhumans.

It takes years for a novice to graduate into an actor. Seven years of full-time practice

Kathak: Pandit Birju Maharaj, a great exponent of the dance-form under a meticulous teacher is the minimum called for. But to make an accomplished actor able to portray versatility, it takes many more.

Kathakali had its origins in the courts of the kings of Kerala. It is considered to be a highly synthetic art form, combining in itself the rudiments of its earlier forms like Krishnanattam and Ramanattam plus a highly scientific dance drama form. It is not folk, but highly classical, though not very old.

Most of the attakathas were written in the last century, but new attakathas are also appearing, though the standards are still kept undisturbed. There is plenty of innovation going on, yet all within the framework of the basic format. One of the noteworthy innovations was *rendering* Goethe's German classic *Faust* into an attakatha.

Poet Vallaṭhol can be said to be the fountainhead of all inspiration in regard to today's kathakali. He authored many a script. 'Kerala Kalamandalam' at Cheruthuruthy on the bank of Bharatapuzha is the premier insitution in this regard.

Koodiyattam. This is always a long drawn out affair and may take anywhere from a few days to a number of weeks. It is both entertainment and edification. The Vidhushaka rules the roost. He moralises and his armoury – satire and inneunda – has some times no relevance to the theme of the play.

Krishnanattam. It is intended for presentation on eight successive nights to unfold the entire story of Lord Krishna; the style is almost akin to Kathakali.

Kuchipudi. It is the dance drama of Andhra Pradesh. It is the corresponding style of the Bhagavata Mela Nataka of Tamil Nadu. Except that the emphasis is on the animation, the grammar is derived from the Natya Shastra and in all other aspects it is akin to Bharata Natyam.

Tirtha Narayana and Siddendra Yogi evolved this style. Kuchelapuram in Andhra Pradesh was the originating centre for this style. Hence the name Kuchipudi. It was male prerogative. In recent years wome have taken to it but it is mostly solo danc that they perform. To this extent the concep has been watered down. Like Kathakali used to be a week-long affair. Vedanthan Satyanarayana is the doyen of this style an he has carved out a niche for himself i portraying the role of the haughty, beautifu and vain-glorious Satyabhama. Vembhat China-Satyam, however, is the most popula guru today.

Manipuri. From the 15th to the 18th centuries, Vaishnavism came to be adopted in Manipur and this ushered a new era in the development of this style. For Manipuris dance has been so inextricably woven into their pattern of life. The dance form is mostly ritualistic. It has still preserved the dance drama technique which draws heavily from the rich lore of legend and mythology. Costumes are colourful and the music has a quaint old-world charm. The numbers presented are Lai Haraoba and Rasa Leela. The former deals with the creation of the world and the latter is on Krishna Leela.

For Manipuris, dance has been so inextricably woven into their patten of life. The dance form is mostly ritualistic. Its dance-drama technique draws heavily from the rich lore of legend and mythology.

Drums play an important part and the Poonang Cholom item is a must in any performance. The Kartar Cholom danced with cymbals is another exciting item.

Mohiniyattam is also the heir of Devadasi Dance heritage like Bharatanatyam, Kuchipudi, Odissi. The word 'Mohini' literally means a maiden who exerts desire or steals the heart of the onlooker. There is the well-known story of Lord Vishnu taking on the guise of a 'Mohini' to enthral people, both in connection with the churning of the milk-ocean and with the episode of the slaying of Bhasmasura. Thus it is thought that Vaishnava devotees gave the name of Mohiniyattam to this dance form.

In format, this is similar to Bharatanatyam. The movements are graceful like Odissi and the costumes sober and attractive. It is essentially a solo dance.

The first reference to Mohiniyattam is found in 'Vyavaharamala', composed by Mazhamangalam Narayanan Nambudiri, assigned to the 16th Century A.D.

In the 19th century Swathi Tirunal, the king of erstwhile Travancore, did much to encourage and stabilise this art-form. It was Poet Vallathol who again revived it and gave it a status in modern times through Kerala Kalamandalam, which he founded in 1930. Kalamandalam Kalyaniamma, the first dance teacher of Kalamandalam, was instrumental in resuscitating this ancient art form. It is slowly trying to acquire an identity and classical status.

Odissi. This is also based on the Natya Shastra and the earliest evidence, we have of the existence of the art of dance in Orissa is during the 2nd century B.C. when the Jain King Karavela ruled. Himself an expert dancer and musician, he arranged a performance of Thandava and Adhinaya.

In the early 17th century, a class of boys known as Gotipuas, came into being. They dressed as dancing girls and danced in the temples. Grace is its uniqueness and the most important elements are the Bhangis and Karanas. The Bhangis are the basic poses and the Karanas the basic dance-units.

The format consists of Bhumi Pranam, Batu, Pallavi and lighter items like the Ashtapadi ending in moksha approximating to the Thillana of the South. It has gained great popularity today and it is to the credit of Smt. Samyukta Panigrahi to have made it acquire universal appreciation. Today Kelucharan Mahapatra has become a name to reckon with as a pre-eminent guru.

Ottan Thullal. It is performed solo and because of its ready mass appeal, it is also known as the poor man's Kathakali. Kunjan Nambiar evolved it and brought out the social conditions of his time, the distinctions of class and the weaknesses and whims of the rich and the great. The dialogue is in simple Malayalam and therefore ensures mass appeal.

Yaksha Gana. This belongs to Karnataka and has a rural origin. It is an admixture of dance and drama. Its heart lies in 'Gana' namely music. It is about 400 years old. The language is Kannada and the themes are based on Hindu epics. The costumes are almost akin to the Kathakali ones and the style seems to have drawn inspiration from Kathakali. As prescribed in the Natya Shastra, it has the Suthra Dhara (conductor) and the Vidhushaka (the jester).

INDIAN PAINTING AND SCULPTURE

Despite great gaps in our knowledge of continuities in history, the story of Indian painting has to begin with the art of primitive man which has survived in rock shelters and caves in places like Hoshangabad, Mirzapur, Bhimbetka.

Stone Age paintings belonging to the Magdalenian phase (15000 B.C) have been discovered elsewhere. The chances are that the paintings in India do not go that far back. But the primitive mindset and vision can survive for long when communities are isolated and thus these paintings share the vivid realism of primitive art that has been discovered in many places like Altamira in Spain and Lascaux in France. The silhouette effect creates a dramatic shadow-play of scenes of hunt, the open mouth of the wounded boar expresses all its pain.

The epoch of the Indus Valley Civilization (3000 B.C. - 1500 B.C) was one of elegant urban culture, but since the superstructures have not survived, no murals have come down to us. But in the case of the Aegean culture of ancient Crete we find close similarity between mural painting and the painting on pottery. The Indus epoch also may have had extensive mural painting, for the painting on the pottery that has come down to us in abundance shows maturity and range, from vigorous realism through rhythmic stylisation to strikingly expressive abstraction.

If the curtains come down again and the stage remains dark for over a millennium, it is on one of the world's greatest treasures of art that they rise. The earliest paintings of Ajanta may date back to the first century B.C.

and the latest to the eighth century. The spirit of the compassionate Buddha is their inspiration.

Perhaps Hinayana or early Buddhism did not understand that spirit correctly, for it remembered only the transience of things, the pervasiveness of pain. But, though Siddhartha had wanted to take his infant son with him when he left the palace, he could not because the mother's hand lay protectingly over the child even in her sleep. He remembered this after his enlightenment and told all to have the same kind of protective regard for every living thing. He rejected Nirvana for himself and was born again and again to help humanity in its travails, not only in many human roles, but as a deer, an elephant, a swan.

The Jataka tales elaborated the vicissitudes of these incarnations and the Ajantan artists painted them in sinuous line and sensitive colour. City, countryside and forest, men and women of every type, fauna and flora, all are mirrored in these murals.

Mughul painting was elistist reflecting imperial form and circumstances. Rajput painting presented in line and colour the great myths and legend of the story of Rama, of Krisha of the 'Bhagavata'.

Since the brush and the chisel accompanied the message of peace when Buddhism radiated to the sea-girt lands of the south and the heartland of the continent, Ajanta became a fountainhead of Asian painting and murals with the clear stamp of its style can be seen in Sigiriya in Sri Lanka, Bamiyan in Afghanistan, in many places along the old silk route in China, in Korea and in Horiyuji in Japan.

In India itself the mural tradition continued, though with spent momentum, in Chalukyan Badami (sixth century), Pallava Panamalai (seventh century), Pandyan Sittannavasal (ninth century), Chola Tanjore (twelfth century), Lepakshi of Vijayanagar (sixteenth century) and the murals of Kerala of various dates reaching to the middle of the nineteenth century.

In the meanwhile, painting had come down from the extended mural surface to the miniature dimensions of the manuscript, originally on palm-leaf, later on paper. The miniatures of Pala period Bengal (tenth and eleventh centuries) conserve the sensuous line of Ajanta. But there is a rapid decline now and the line becomes brittle and angular.

It is this style that spread to western India and is seen in numerous illuminated manuscripts, the bulk of them being Jain texts, of the period from the twelfth to the fifteenth centuries. But a wind of change begins to blow during the latter half of the fifteenth century and the first quarter of the sixteenth.

In response to the lyricism of poems like the *Vasanta Vilasa* (Dalliance in Spring), Bilhana's *Chaura Panchasika* (Fifty Stanzas on Stolen Love) and *Laur-Chanda* (the Romance of Lorik and Chanda), line again becomes supple, colour lustrous. The Indian miniature stabilises a fine pictorial style even before the advent of the Moghuls.

Though the imperial atelier of Akbar was headed by artists from Persia, Moghul painting is not a provincial school of Persian painting. The latter retreats into a paradisiacal world of romance, while Akbar is interested in contemporaneity, in history in the making. The organisation of the studio and its working also brought about a rapid indigenisation of the alien idiom.

Akbar recruited a very large number of Indian artists. Each painting was most often a cooperative effort of Indian and Persian artists, one man doing the drawing, another the colouring, a third the details. The indigenisation received further momentum when Akbar commissioned the translation and illustration of Indian texts like the *Ramayana* and the *Mahabharata*.

It is mostly artists trained in the Moghul atelier who became the court painters of the Rajput princes. But while Moghul painting was elitist, reflecting imperial pomp and circumstance, Rajput painting presented in line and colour the great myths and legends of the land, the story of Rama, of Krishna of the *Bhagavata* and the *Gita Govinda*. Of the many states in the plains, or Rajasthan, two

Modern era of painting: M.F. Husain before his own creation at New Delhi.

need special mention

The style of Kotah painting anticipates by nearly eighty years the primitive vision and virility of European fauvists like Douanier Rousseau. That of Kishangarh painting manages the perfect piotorialisation of the poetry of the Radah-Krishna story.

In the small principalities of the Himalayan valleys set up by intrepid Rajput warriors from the plains, many centres came up of which Basohli is unique for its intensity of expression, Kulu for its closeness to the folk style and Kangra for both its romanticism and large output.

A decline followed the close of the Rajput phase. With the stronq presence of the west in the British era, western academism became popular, mostly self-taught in the case of a pioneer like Ravi Varma, through institutional training in the case of others. The revivalist school, headed by Abanindranath Tagore, was nationalist in inspiration, but its pictorial achievement was weak and sentimental.

The four pioneers of modern painting in India are Gaganendranath Tagore who tried out every technique and style, Amrita Shergil who integrated the pictorial idiom of the west and an Indian vision, Jamini Roy who discovered the virility of the folk tradition and modulated it in many ways and Rabindranath Tagore who demanded for paintings music's autonomy and independence from factuality and thus gave a charter for free variations on naturalism, abstraction and expressionism

SCULPTURE

The story of Indian sculpture begins with the epoch of the Indus Valley Civilization and it is already a startlingly mature achievement. The figurine of the dancing girl that has come down to us testifies to good knowledge of bronze casting, indicates the fascination of the feminine figure that will endure throughout, points to the close relation between sculpture and dance in the Indian tradition

Terracotta is the medium for objects used in ritual like mother goddess figurines as well as for recreation like toys of a great variety. Despite their small size stone sculpture achieves monumentalism and animals like bulls represented in the small steatite seals have a vibrant realism.

The dispersal of Persian craftsmen when the Achaemenid empire was overrun by the Greeks in the fourth century B.C. may have contributed to the monumental stylisation of the figure of the lions in the Asokan pillar that has been adopted as India's national emblem. But the Mauryan age also evolved a gentler style in the bull of the Rampurva pillar and the sympathetic treatment of animals continues throughout in Indian sculpture. The Yakshas and Yakshis (spirits of hills and trees) are at first rather rigid figures but the feminine figure soon becomes sensuously refined, even though remaining ample, in the Didarganj Yakshi.

The Sungas who replaced the Mauryas in the second century B.C. further refined the Yakshi figure with elaborately carved costume and jewellery, linked tree and woman through the nexus of fertility which symbolism was poetically brought out in the compositions, developed the skill for fluent narration in running friezes of low-relief or deep-relief sculpture.

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The Satavahanas (second century B.C. to second century A.D.) further developed these traditions. The dryads of Sanchi are the most lissome representations of the type. Narrative sculpture at Amaravati brilliantly solved the problem of composition in awkward shapes like that of the medallion.

In the north-west regions now no longer in India, in the Indo-Greek kingdoms that emerged in the wake of the invasion under Alexander, the plastic vision of ancient Europe combined with Buddhist spirituality to create the art of Gandhara. This region became part of the vast Kushan empire of Kanishka (second centruy A.D.) which stretched from the Oxus to the Ganges. But the Kushans mostly resided at Mathura and the art of this epoch was in the main a prolongation of the earlier traditions.

However, it was an age of highly urbanised and relaxed mores and the Yakshi figure loses its links with the woods, becomes a self-consciously seductive damsel of the city. Scenes of revelry with the wine flowing freely are represented in sculpture. Feminine apparel begins its fine adventure of ambivalence, revealing while pretending to conceal for the Mathura nymph wears so transparent a fabric that she appears nude.

The age of the imperial Guptas (300-600) achieved the classic stabilisation of the icon of the Buddha, represented as seated or standing, and with various symbolic gestures of the hands. The circular medallion that had decorated the railings in Sungan and Kushan times evolves here to the splendid aureole or halo of the Buddha. The transparent apparel of the Kushan epoch falls here in fine folds that trace flowing rhythmic patterns all over the figure. The visage with its delicacy of moulding achieves a rapt serenity of expression, a quality of inward musing, realised never before.

The Gupta creation of the classical icon of the Buddha is a landmark in the art of Asia for, like the Padmapani of Ajanta, it radiated to many lands. This age also created magnificent sculpture on Hindu themes like the incarnations of Vishnu in the late fifth century temple of Deogarh and the powerful representation of the boar (Varaha) incarnation salvaging the earth, hewn from the rock at Udayagiri.

The Vakatakas of the Deccan were the contemporaries of the Guptas and under their patronage fine sculpture came up in abundance, mostly Buddhist at Ajanta, Hindu at Ellora. The achievement has great range, from the lightness of flying figures and the elegant rhythmic balance of dancing groups such as the one at Aurangabad to the majesty and wealth of symbolic meaning of the triune Mahesa at Elephanta.

The Western Chalukyas continued these rends, creating floating figures and dancing Sivas at Badami, Aihole and Pattadakkal. The Eastern Chalukyas also created some fine sculptures of dance in the temples of Viayawada region.

In the eighth century, the Rashtrakutas carved a whole hill of rock at Ellora to simulate a structural temple and peopled it vith sculpture on the exploits of Siva which share the turbulent power of their unique rchitectural achievement. The Gurjara-Praiharas who were their contemporaries evolved a less turbulent though still nonumental style in such creations as the cosmic form of Vishnu, created poetically sensitive sculptures like the one showing the vedding of Siva and Parvati and contributed one of the loveiest dryads in the Indian radition.

The Gahadvalas continued this tradition and the twelfth-century head from Rajorgarh s probably the best Indian sculpture for the nost elegant representation of feminine coiffure. This trend of exquisite feminine figuration climaxed in the epoch of the Chandellas (tenth to twelfth centuries). The eroticism of khajuraho sculptures has unfortuantely attracted undue attention all over the world.

But far more sensitive in modelling and poetic in sensibility are the representations of woman in her various moods of longing, expectation, reverie. Eroticism is found in the sculptures of Konarak and Bhuvaneshwar ~~of~~ the epoch of the Eastern Gangas (thirteenth century) too. But here again the poetic and romantic figurations of women are more sensitive.

Moving further south, the great achievement of the Pallavas (eighth century) was the gigantic tableau at Mahabalipuram where a whole rock-face has been carved into a representation of the descent of the Ganges and the teeming animal and human life on its banks. There are some exceptionally fine and deeply sympathetic studies of animal life here.

Siva is the towering figure in Chola sculp-

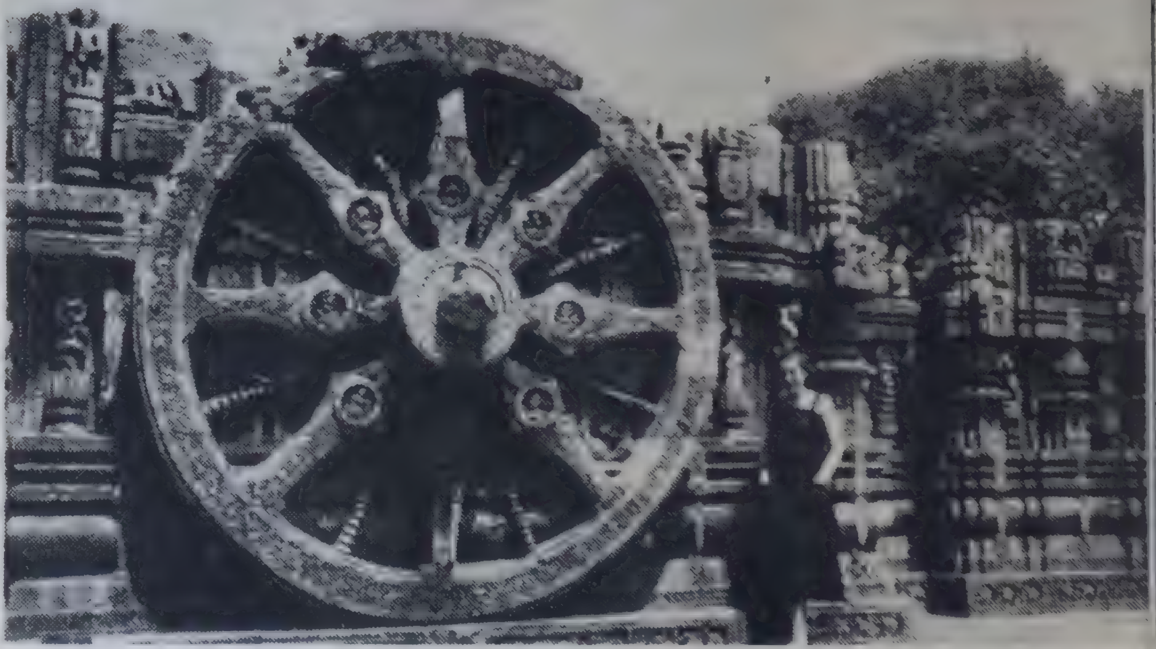
Landscpe sculpture by Alexander Calder: Painted Steel.

ture (eleventh and twelfth centuries) in stone too besides bronze. But it is the work in bronze, especially the Nataraja or dancing Siva, that has become worldfamous, and deservedly. Matching profound concept with perfect plastic form, this great iconic creation sees the incessant change of the world, the gyration of the electron as well as the galaxy, as ordered process, assures man that it is a benign order.

Under the Hoysalas (twelfth century) the Karnataka region created a sculpture where the soft chloristic schist used tempted rather excessive detail and ornamentation. In the sixteenth century, Vijayanagar favoured a sculpture that reflected imperial pomp in elephant processions, cavalcades, marching soldiery.

Stone sculpture influenced by the Pallava tradition and bronzes influenced by the Chola style were produced in Kerala, but its unique achievement is in sculpture in wood.

Exposed to stimuli from all over the world, Indian sculptors today are experimenting in all styles, using new materials like steel and aluminium, fibreglass and even fibre. But the most significant trend seems to be the one which seeks to recover the iconic quality, the power to stir the impulses of awe and adoration which are humanistically the most valuable strains of the Indian sculptural heredity.



The majesty that was India: One of the 24 magnificent stone chariot wheels at Konarak in Orissa.

LANDMARKS OF HISTORY

First wave of Aryan immigration into India began in 1500 B.C. They settled in the Punjab. Composition of the *Rig Veda* was the high watermark of the Vedic Age.

B.C. 1000: Aryans expand into the valley of the Ganga: Composition of the ***Brahmanas.*** 900: Mahabharata War. 800: Aryans penetrate into Bengal: Composition of the ***Mahabharata:*** First version of ***Ramayana:*** Beginning of the Epic Age. 550: Composition of the ***Upanishads.***

Jainism & Buddhism: 544 (?): Traditiona

Date of Buddha's Nirvana. 527 (?): Accession of Darius I in Persia. 518: Darius sends Scylax on a naval expedition down the Indus: Persian conquest of north west India: Formation of a Persian Satrapy in India. 500: Aryans in the South and Ceylon. 326: Alexander invades India. 323: Death of Alexander.

Mauryan Period: 321: Chandragupta unseats the Nanda dynasty in Pataliputra and found the Maurya dynasty. Kautilya, the Chief Minister of Chandragupta, writes ***Arthasastra*** (Science of Government). 272-232: Reign of Asoka. 185: Pushyamitra, the Mauryan General overthrows the last Mauryan Emperor Brihadratha and founds the Sanga dynasty.

Chola Empire. 145: Chola king Erata conquers Ceylon. Kharavela builds up an empire in Kalinga. 58: Epoch of the Krita-Malava-Vikrama era. 30: Satavahana dynasty in the Deccan. Pandyan Empire in the far South. 26: A Pandyan king sends an embassy to Rome. Chera kings in Kerala.

A.D. 40: The Sakas or Scythians in power in the Indus Valley and western India. 52: Parthian King Gondopharnes in North West India. St. Thomas begins preaching in India. 78: Saka Era begins. 98-117: Kanishka, the Scythian King. 320: Chandragupta I establishes the Gupta dynasty—Gupta Era begins. 360: Samudra Gupta conquers the whole of northern India and much of the Deccan.

380-413: Chandragupta Vikramaditya—The Golden Age of Literary the Gupta — Renaissance—Kalidasa and other poets. Renewal of Hinduism. 606: Accession of Harsha Vardhana. 609: Rise of the Chalukyas. 622: Era of the Hejira begins. 711: Invasion of Sind by Muhammad Bin Kassim. 753: Rise of the Rashtrakuta Empire. 892: Rise of the Eastern Chalukyas. 985: The Chola Dynasty—Rajaraja the Great.

1026: Sack of Somnath by Mahmud of Ghazni. 1191: Prithvi Raj Chauhan, King of Delhi, routs Muhammad Ghori—the first battle of Tarain. 1192: Muhammad Ghori defeats Prithvi Raj—second battle of Tarain. 1206: Qutbuddin Aybek establishes the Slave dynasty at Delhi. 1221: Mongol invasion under Genghis Khan. 1232: Foundation of the Qutub Minar.

Marco Polo visits India. 1298; 1290: Jalaludin Firuz Khilji establishes the Khilji dynasty at Delhi. 1320: Ghiyasuddin Tughluk founds the Tughluk dynasty at Delhi. 1333: Ibn Batutah arrives in India. 1336: Foundation of Vijayanagar (Deccan). 1398: Timur invades India. 1424: Rise of the Bahmani dynasty (Deccan). 1451: The Lodi dynasty-Bahlul Lodi ascends the throne of Delhi. 1489: Adil Shah dynasty at Bijapur. 1490: Nizam Shahi dynasty at Ahmadnagar.

Neo-Colonialism?

One of our standing complaints about British rule in India was the Arms Act, which applied only to Indians. Its terms were so stringent as to be strangulatory. We have roundly condemned the Act as anti-Indian and anti-national.

The Arms Act continued in all its stringency even after freedom. On June 22, 1983 the terms of the Act were made even more stringent by an Ordinance promulgated by the President. Now nobody complains. Perhaps, it is because, as Byron tells us, "Our masters now are still at least our countrymen."

Vasco da Gama lands at Calicut: 1498; 1510: Portuguese capture Goa—Albuquer que Governor. 1518: Kutab Shahi dynasty at Golconda. 1526: First Battle of Panipat—Babur defeats the Lodis—Establishment of the Mughal dynasty. 1530: Humayun succeeds Babur. 1538: Death of Guru Nanak. 1539: Sher Shah defeats Humayun and becomes emperor of Delhi. 1555: Humayun recovers the Delhi throne from Eslam Shah, successor of Sher Shah.

1556: Death of Humayun—Accession of Akbar. Akbar defeats Hemu at the second battle of Panipat. 1564: Akbar abolishes 'Jiziya' or poll tax on Hindus. 1565: Battle of Talikota—An alliance of Muslim rulers in Deccan defeats and destroys Vijayanagar Empire. 1571: Foundation of Fatehpur Sikri by Akbar. 1576: Battle of Haldighat. Akbar defeats Rana Pratap Singh of Mewar.

1582: Akbar proclaims ***Din Ilahi*** or Divine Faith—an attempt at synthesising Hinduism and Islam. 1597: Akbar completes his conquests. Death of Rana Pratap.

English East India Company. 1600; 1602: Netherlands East India Company.

1605: Death of Akbar and the accession of Jehangir. 1609: The Dutch open a factory at Pulicat. 1611: The English establish a factory at Masulipatam. 1627: Death of Jehangir—Accession of Shah Jehan—Birth of Shivaji.

The Tajmahal. 1631: Death of Shah Jehan's wife Mumtaz Mahal—The building of the Taj Mahal. 1639: Foundation of Fort St. George at Madras by the English. 1658: Aurangzeb becomes emperor of Delhi. 1664: Shivaji assumes royal title. 1679: Aurangzeb re-imposes Jiziya. 1707: Death of Aurangzeb. 1720: Accession of Baji Rao Peshwa at Poona.

1739: Nadir Shah of Persia conquers Delhi. 1742: Mahratas invade Bengal—Dupleix, French Governor of Pondicherry. 1748: First Anglo-French war. 1757: Battle of Plassey—The English defeat Siraja Daulah—Mir Jafar, Nawab of Bengal. 1760: Battle of Wandiwash—The English defeat the French. 1761: Third Battle of Panipat—Ahmed Shah Abdali, the ruler of Afghanistan, defeats the Mahratas—Mahrata imperialism checked.

1764: Battle of Buxar—the English defeat Mir Kasim. 1765: The English get Diwani Rights in Bengal, Bihar and Orissa—Clive, Governor in Bengal. 1766: The English secure Northern Circars in the Carnatic.

1767-69: First Mysore war—the British conclude a humiliating peace with Hyder Ali of Mysore. 1772: Warren Hastings, Governor of Bengal. 1773: The Regulating Act passed by the British Parliament. 1775-82: First Anglo-Mahrata war. The Treaty of Salbai. 1780-84: The Second Mysore War. The English defeat Hyder Ali. 1784: Pitt's India Act.

1790-92: Third Mysore War between the English and Tipu—An indecisive war concluded by the Treaty of Seringapatam. 1793: Permanent Settlement of Bengal. 1798: Marquess of Wellesley becomes Governor General of India. 1799: Fourth Mysore War—The English defeat Tipu—Death of Tipu—Partition of Mysore. 1801: The English annex the Carnatic. 1803-5: Second Anglo-Mahrata War. British under Sir Arthur Wellesley inflict a crushing defeat on the Mahratas at Assaye. 1817-19: Mahratas finally crushed by British forces. 1828: Lord William Bentick becomes Governor General—Era of social reforms—Prohibition of Sati (1829). Suppression of Thugs (1837).

Rise of the Sikhs under Ranjit Singh: 1881; 1845-46: First Anglo-Sikh War—Defeat of the Sikhs. 1848: Lord Dalhousie becomes Governor General. 1848-49: Second Anglo-Sikh War—Sikhs defeated in battle (1848). The British annex Punjab.

First Indian Railway opened from Bombay to Thana: 1853; 1857-58: First War of Indian Independence. 1858: British Crown takes over the Indian Government—Queen Victoria's Proclamation. 1861: Indian Councils Act—Indian High Courts Act—Indian Penal Code. 1868: Railway opened from Ambala to Delhi. 1877: Delhi Durbar—The Queen of England proclaimed Empress of India.

1878: Vernacular Press Act. 1881: Factory Act—Rendition of Mysore—Mysore State restored to its original ruler.

Congress. 1885: First meeting of the Indian National Congress, 1892: Indian Councils Act to regulate Indian administration. 1899: Lord Curzon becomes Governor General and Viceroy. 1905: First Partition of Bengal. 1906: Formation of the Muslim League. 1908: Newspapers Act. 1909: Minto-Morley Reforms. 1911: King George V and Queen Mary hold a Durbar in Delhi. Partition of Bengal modified to create the Presidency of Bengal. The imperial capital shifted from Calcutta to Delhi.

The First World War begins: 1914; 1915: Defence of India Act. 1918: World War ends. 1919: Rowlatt Act intended to perpetuate the extraordinary powers enjoyed by the Government during the war provokes countrywide protests. The Massacre at Jalianwallabhag. Ali brothers and Maulana Abul Kalam Azad start the Khilafat movement (for restoring the Turkish Khalifate) with Gandhiji's support. Perfect Hindu-Muslim accord. Montague-Chelmsford Reforms offer limited provincial autonomy to Indians.

1920: Congress okays non-cooperation movement. Students leave colleges, lawyers leave practice. Bonfire of British clothes, etc. to show popular dissatisfaction with the reforms. 1921: Moplah (Mulsim) rebellion in Malabar. Visit of the Prince of Wales. Nationwide hartal. Census of India.

Gandhiji. 1922: Civil Disobedience Movement. Congress makes Gandhiji sole leader of Bardoli satyagraha. Outburst of violence at Chauri Chaura. Gandhjiji sus-

ends movement on this account.
1923: Swarajya party started by C. R. Das
nd Motilal Nehru. Swarajists propose to
nter the Councils and wreck the govern-
ent from within. Khilafat movement fizzles
ut as Kemal Pasha declares Turkey a
ecular state. Hindu-Muslim riots. 1925:
eath of C. R. Das. 1926: Lord Reading
xpounds to the Nizam what paramountcy
nplies. Royal Commission on Agriculture.
actories Act. 1927: Indian Navy Act. Simon
ommission appointed. 1928: Simon Com-
ission comes to India. Boycott by all parties.
ll Parties' Conference. Muslim leaders
ave the Conference.
Lord Irwin, Viceroy of India, promises
ominion Status for India. Lahore Session of
e Congress asks for independence. On the
idnight of Dec. 31, Pandit Jawaharlal Nehru,
resident of the Congress, hoists the National
lag at Lahore.
1930: Jan. 26 observed as Independence
ay all over India. Civil Disobedience Move-
ent continues. Gandhiji goes walking to
andi—Salt Satyagraha. Repression let loose
y the government. First Round Table Con-
rence.
1931: Gandhi-Irwin Pact. Second Round
able Conference. Census of India. 1932:
uppression of Congress movement. Third
ound Table Conference. The Communal
ward. Poona Pact. 1933: White Paper on
dian reforms. 1934: Civil Disobedience
ovement called off. 1935: Government of
dia Act.
1936: Death of King George V. Accession
nd abdication of Edward VIII, Accession of
eorge VI. 1937: Inauguration of Provincial
utonomy. Congress Ministries formed in a
ajority of the provinces.

econd World War begins: 1938,
lso Resignation of Congress Ministries. Political deadlock in India. 1941: Japan enters the war. Attack on Pearl Harbour.

1942: Singapore falls to Japan. Japan occupies Rangoon. The British evacuate Burma. Cripps Mission to India. Both Congress and Muslim League refuse Cripps offer. Congress adopts Quit India Resolution (Aug. 8). Congress leaders arrested and Congress declared an illegal body (Aug. 9). Subhash Chandra Bose (Netaji) forms the Indian National Army in Malaya, with the help of the Japanese. He inaugurates Government of Free India at Singapore.

1943: Lord Wavell Viceroy and Governor General of India. Wavell's proposals for a settlement fall through as the Congress and the Muslim League could not agree. 1945: The Indian National Army under Bose surrenders to the British after collapse of Japan. National Army personnel tried for treason in India.

1946: Demonetisation of currency notes of the value of Rs. 500 and above (Jan. 12). Demonstrations against the trial of the INA men. The ratings of the Royal Indian Navy rise in open mutiny (Feb. 18). Cabinet Mission in India (Aug. 19). Cabinet Mission announces its plan for an interim government and a constituent assembly. The interim government is to be formed by reconstituting Viceroy's Executive Council. Both Congress and the Muslim League reject the proposal. Later the Congress accepts it. So the interim government is formed by inducting Congress nominees only. The Muslim League takes umbrage and starts direct action. Muslims attack Hindus in Calcutta and the rest of Bengal. Hindus retaliate. Riots break out. Viceroy persuades the Muslim League to come in. But the League declines to join the Constituent Assembly unless the demand for a separate state—Pakistan—is conceded.

THE NATIONAL MOVEMENT

The National Movement or the movement for independence was a part of a larger spectrum of national resurgence, which covered almost all aspects of national life, religious, social, educational, cultural and economic.

While the progress in the different
heres differed in degree and in kind from
gion to region, one common desire animated all regions, namely, to gain independence. How the British administration tackled this problem and how it finally ended in the

partition of India and the formation of two independent states, India and Pakistan, is too long a story to be recounted in a few pages.*

When Lord Dalhousie laid down his office in 1856 and Canning took over as Governor General the British Empire in India had extended to its natural boundaries—from Indus in the west to Irrawady (Burma) in the east and from the Himalayas in the north to Cape Comorin (Kanyakumari) in the far south. The British Indian dominion was made up of two distinct political segments—territories directly administered by the East India Company and those ruled by Indian princes who owed fealty to the company. For the first time in many years, peace seemed to have settled all over India.

But those who knew the antecedents leading to the establishment of ***Pax Britannica*** in India were skeptical of the apparent peace. The pacifist Lord Canning who succeeded the aggressive Lord Dalhousie as Governor General felt that the calm was ominous.

Replying to the toast at the farewell dinner given in his honour by the Directors of the East India Company in London, Canning said, "we must not forget that in the sky of India, serene as it is, a small cloud may arise, at first no bigger than a man's hand, but which growing larger and larger, may at last threaten to burst and overwhelm us with ruin". Never was prophecy more quickly fulfilled or so grimly. In the summer of 1857 the massed clouds burst and the entire British dominion in India shook to its foundations.

Revolt of 1857. This was the revolt of 1857, which the British historians have dubbed the ***Sepoy Mutiny*** and the Indian historians, the ***First War of Independence***. True, it began as a mutiny of Indian soldiers against their British commanders. But it soon changed its character and became a fight against British rule as such.

Indian soldiers had broken out in open mutiny against British officers many times previously—in 1806 at Vellore (Madras), in 1842 in Bengal, in 1844 in Sind, then in Bihar and Punjab. None of these had any political overtones. But the so-called Mutiny of 18 differed radically in this respect.

All the previous mutinies have been pu down mercilessly and the suspected rin leaders were subjected to gruesom punishments, without proper investigatic or trial. These helped only to feed the fire of discontent.

In the meantime, other factors wer building up political bonfires in differe parts in India. Lord Dalhousie's ***Doctrine*** ***Lapse***, under which no prince was allowe to adopt an heir without the previou permission of the British rulers, extin uished many princely kingdoms in India. the same time, the British Administratic also started interfering in the internal adm nistration of Indian States. This policy furt er inflamed the princely and aristocrat classes in India.

The two elements—military an political—coalesced in the revolt of 185 The Indian soldiers having massacred th British personnel, marched to Delhi in Ma 1857. They proclaimed the aged Mugh Emperor Bahadur Shah II as the Emperor India. Bahadur Shah promptly issued proclamation urging upon the people India—Hindus and Muslims alike—"to en the tyranny and the oppression of the infid and treacherous English".

Despite the attempts of British writers play down the events of 1857 as an arm affair, the British Prime Minister, speakin in the House of Commons on July 27, 185 frankly admitted that the outbreak of 18 was not just a military mutiny but a politic revolt.

Last Kick. It is not quite correct describe the revolt of 1857 as a nation revolt. For, at that time, India had not y become a nation. The revolt itself was th last kick of a dying feudal order, led by decadent aristocracy. "The idea of a natic and therefore of nationality was a bequest English education".

There is little doubt that the knowledge English acquired by Indians in every part the country facilitated inter-communicatic and expedited the process of nation integration. The Indian middle clas steeped in English literature and histor gorged themselves with the ideas of ***libert*** ***equality*** and ***fraternity*** which the Americ

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* All unacknowledged quotations in the Section are from Tara Chand, ***History of the Freedom Movement in India***, Vols I-IV

ar of Independence (1773–1787) and the
ench Revolution (1789) had glorified.

The immediate results of the 1857 revolt
re three: 1. The administration of British
lia, until then under the control of the
ard of Directors of the East India Com-
ny, was taken over by the British Govern-
ent. Queen Victoria was proclaimed the
npress of India and the Governor General
s designated the Viceroy and Governor
neral.

2. The British Indian army was re-orga-
ed. The quota of British personnel in the
ny was considerably enhanced and the
illery divisions were manned entirely by
e British. In addition, many purely British
giments were formed. 3. The paramount-
of the British Government was proc-
med, that is to say, all ruling kings and
llar princes of India were declared
idatories of the British Crown. This proc-
nation raised many eyebrows among
lian princes, but there was little, they
uld do in the matter.

After all, unlike Dalhousie's Doctrine of
pse, this declaration was merely the *de*
re expression of an authority, already
ictioning *de facto*. In later years, the
zam of Hyderabad, the biggest of the
lian princes, tried to rake up the question
th Lord Reading, the Viceroy. The
zam's protest was silenced by the cryptic
oly of Reading— "Paramountcy is para-
unt".

The take-over of the Indian Government
the British Government did not eliminate
scontent, and tiffs with the white rulers
ntinued to disturb the peace. The indigo
ts of Bengal in 1859 were the first of such
ubles. They were put down but subse-
ent investigations showed that it was the
ite planters who provoked the riots and
e poor Indian peasants who suffered were
nocent in the matter.

ourth Estate. With the indigo riots,
e agitation for freedom acquired greater
omentum. Meanwhile the spread of En-
sh education brought into being a new
neration imbued with liberal ideas and
lling to fight a long drawn battle with the
itish for independence. At the same-time,
vernacular *Fourth Estate* was slowly
ing shape. Up till now, all periodicals
re in English and were controlled by
Englishmen.

The English Press naturally supported British policies. So it became necessary to publish vernacular periodicals to express Indian aspirations. This resulted in the promulgation of the *Vernacular Press Act of 1878*. This was a discriminatory legislation intended to muzzle the periodicals in Indian languages. The reason advanced by Lord Lytton, the Viceroy, was that "the increasing violence of the Native press now (was) directly provocative of rebellion". The whole of India protested against the Act and appealed to the British government to repeal it. The act was at last repealed by Lord Ripon in 1882.

Lord Lytton as viceroy (1874–1880) fathered an offensive brood of laws and regulations. *The Arms Act* (which exempted Europeans) and the abolition of import duties on British goods were among the more obnoxious performances of Lytton.

Lord Ripon's viceroyalty, otherwise benign, was sullied by the infamous *Ilbert Bill*. This bill amended the Criminal Procedure Code and specified that only European judges could try European offenders for serious misdemeanors. This piece of legislation amply reflected the racial prejudices of the ruling class.

In 1883 a proposal was set afoot to remove this anomaly from the Criminal Procedure Code. The European Community in India rose as one man to oppose the change and they won. "The Bill was so modified as to give the European offenders the right of claiming even in the least cases, trial by jury, of which at least half the number should be Europeans or Americans."

Masses Roused. In 1883 the agitation over the Ilbert Bill still continued. Surendranath Banerjee was arrested for an article he wrote in the *Bengali*. Soon arrests of other persons for seditious articles followed. This accumulation of discriminatory laws, arrests and prosecutions, roused the docile masses.

"It was felt that the time had come to make a determined effort to secure a real and effective control in the management of national affairs". This could only be achieved by a country-wide organisation which would mobilise public opinion all over India and carry the agitation to the masses.

So a series of conferences were held to evolve a national organization. In 1853, a national conference met in Calcutta under the leadership of Surendranath Banerjee. In 1884 Banerjee undertook another tour through north India to rally various political groups together and to collect money for a national fund. Another conference was held in 1885 again in Calcutta—in which delegates from Bengal, Upper India and Bombay participated. The success of these conferences showed that a national organisation was not only feasible but also inevitable.

Some Englishmen in India felt the same way. Henry Cotton and Allen Octavian Hume among them thought that an abic concord between the government and people had to be built up. Cotton wr "They (the educated Indians) tolerate necessity of our government as an irrev able necessity. They demand real, nominal equality, a voice in the governm of their own country and a career in pul service".

Hume went further. He formed the Inc National Union in 1854. The aim of the Ur was "to oppose by all constitutional meth all authorities high and low here or England, whose acts and omissions opposed to the principles of the Gove ment of India laid down by the Bri Parliament and endorsed by the Bri Sovereign".

100-YEAR-OLD CONGRESS

Indian National Congress completed one hundred years of its existence in 1985. Founded by A.O. Hume in association with various national leaders, it has stood the test of time to emerge as one of the strongest political movements in the democratic world.

It was the Indian National Union formed by A.O. Hume that assumed the name Indian National Congress at the conference held in Bombay under the Presidentship of W.C. Banerjee, a veteran lawyer of Calcutta. It was attended by 72 delegates from all over India.

The birth of the Indian National Congress was an unprecedented phenomenon in the political history of India. It marked the entry of the new educated middle class into national politics. The middle class, a byeproduct of the British Raj, was mainly composed of three classes—agricultural, industrial and professional. Each class had its own interests but a growing sense of nationality—often extolled as patriotism—united them in a common programme of action.

These classes were not caste-bound nor tied down by traditional customs. Fed on revolutionary ideas born of the American War of Independence and the French Revolution, they soon separated themselves into two groups—the extremists and the moderates—the equivalents of modern *hawks* and *doves*.

Annual Session. From 1885 onwards the Indian National Congress met every year. Its influence spread rapidly among middle classes. Three main topics engag its attention: (1) representative governm and expansion of the number and functions legislative councils both in the provinces a at the centre, (2) Indianisation of higl services, (3) Indian poverty.

In 1886 the Congress resolution on Ind poverty read as follows: "That this Congr regards with the deepest sympathy views with grave apprehension the incre ing poverty of the vast numbers of population of India and desires to record firm conviction that the introduction of rep sentative institution will prove one of the m important political steps towards the ar lioration of the condition of the people'

In 1889 at the fifth congress meet, protection of the minority communities un a representative government was specific ly urged. The minorities included Par Christians and Muslims—and Hindus wl they were in a minority in any partic area. This resolution formed the seed-be communal representation which in l years loomed dangerously on the polit horizon.

The criticism of the Congress-led educated classes regarding the indifference and imperviousness of the British administration to the welfare of the Indian masses naturally annoyed the government which began to indulge in repressive measures. This encouraged the extremists who became more popular and consequently more venturesome.

Partition of Bengal. As the 19th century drew to a close—to be precise on December 30, 1898—Lord Curzon* came down to India as Viceroy. "Curzon was a brilliant intellectual—scholar, writer, speaker—but he was inordinately ambitious, overwhelmingly vain, obstinate, heedless of advice, contemptuous of opposition, self-righteous, unscrupulous and moody..." (Tara Chand).

The crowning ambition of Curzon was to destroy the political influence of the educated middle class, among whom the Bengali intelligentsia were the most prominent. So his first attention was directed to Bengal. His secretariat pointed out that the province of Bengal as constituted at the time was unwieldy with an area of nearly 190,000 sq. miles, a population of 78.5 million people and a gross revenue of over 1,140 lakh rupees.

There was no direct contact between the heads of the provincial government and the millions of Bengal. What made the question spicy and of special interest to Curzon was the fact that "the influence of East Bengal in the politics of the provinces is great, out of all proportions to the real political importance...These eastern districts of Bengal are a hotbed of purely Bengali movement, unfriendly, if not seditious in character".

So it was proposed (1903) that the province of Bengal should be reduced in size—by the transfer of Chittagong division including the port and the districts of Dacca and Mymensingh to Assam, but leaving Bihar, Chhota Nagpur and Orissa within Bengal. This would add up to a population of about 11 lakh as against 785 lakh in the old Bengal. A stupid proposal on all counts, it created an uproar not only in Bengal, but all over India. At countless public meetings, the scheme was execrated and anathematised but the government remained adamant.

Historic Site

When the Congress Working Committee met at the historic Tejpal Hall, Bombay on December 27, 1985, it was doing something momentous—back-dating the birth of the Indian National Congress. Because the Congress came into being only on December 28 hundred winters ago.

To quote eminent historian A.C. Mazumdar: "The first meeting of the Congress took place at 12 noon on December 28, 1885, in the great hall at the Goculdas Tejpal Sanskrit College, where all the representatives were assembled amidst a distinguished, though somewhat limited, gathering of officials and leading citizens of Bombay."

Even the inscription on the marble plaque outside the Tejpal Hall confirms this: "In this historic hall on December 28, 1885, a band of gallant patriots laid the foundations of the Indian National Congress, which during these 50 years has been built up stone by stone, tier by tier, by the faith and devotion, courage and sacrifice of countless men and women, as the pledge and symbol of the invincible purpose to secure to India, their motherland, her legitimate birth-right of Swaraj. This tablet is placed to commemorate the occasion of its golden jubilee, December 28, 1935."

In1905 Curzon was compelled to revise his plan. The new scheme reduced the old province of Bengal in size and population (141,550 sq. miles and 544 lakhs) and created a new province called East Bengal and Assam consisting of an area of 106,540 sq. miles and a population of 310 lakh. The partition came into effect by a Royal Proclamation on 16th October, 1905.

Condemned. The scheme was condemned not only in India but also by the British Press. *The Times* (London) wrote "It is impossible not to sympathise with repugnance of their (Bengalis) leaders from arrangements which thus divided them under two separate governments". The Manchester *Guardian* observed "It is hard to explain, though it is still harder to excuse his (Curzon's) support of the scheme for cutting Bengal into pieces".

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* Curzon's pretentions of superiority were evident even as a student. His compatriots at Oxford composed the famous rhyme.

George Nathaniel Curzon is a highly super person.

The Indian National Congress, unanimously condemned the partition. In the two Bengals themselves over 2000 public meetings, attended by 500 to 50,000 people were held. In these meetings Hindus and Mohammedans joined in the protests with equal zeal and earnestness. The courage with which Bengal faced its trial stirred the whole of India.

The constitutional agitation so far pursued had ceased to declare dividends. The Swadeshi movement and boycott of foreign goods, became the mainstay of the freedom movement. Side by side, open defiance of government orders, refusal to pay taxes and *bandhs* and *hartals* followed one after the other. The Congress approved the boycott of foreign goods—particularly cloth. The Swadeshi movement gave a fillip to indigenous industries especially in textiles.

Among the retaliatory measures adopted by the Government the first was the stoppage of grant to schools and colleges and their disaffiliation from the recognised universities. Peaceful agitators were broken up by the military, especially by the reckless Gurkha regiments. Flogging of agitators became a daily occurrence.

Meanwhile the new Lt. Governor of East Bengal, Bampfyde Fuller, tried to win over the Muslim population, castigating the Congress as a Hindu organisation and offering special aids and encouragement to Muslim institutions.

Lord Minto who succeeded Curzon followed a judicious policy of admixture of the carrot and the stick, that is, unfaltering repression on the one hand and bonafide attempts at ushering in political reforms on the other. The 1905 session of the Congress at Banaras is in a sense, a turning point in the history of the Congress.

The president, Gopalakrishna Gokhale, though a moderate himself, approved of aggressive agitation. There were, however, a good number of old timers including Gokhale who feared that aggressive tactics, would lead to terrorism and that the national movement itself would get out of hand and become counterproductive.

Radical Change. 1905 also marked a radical change in the functioning of the Congress. So far, the Congress was merely a series of annual conferences at different places. From 1905 it started functioning as a permanent organisation, though annual elections often led to a change of working personnel.

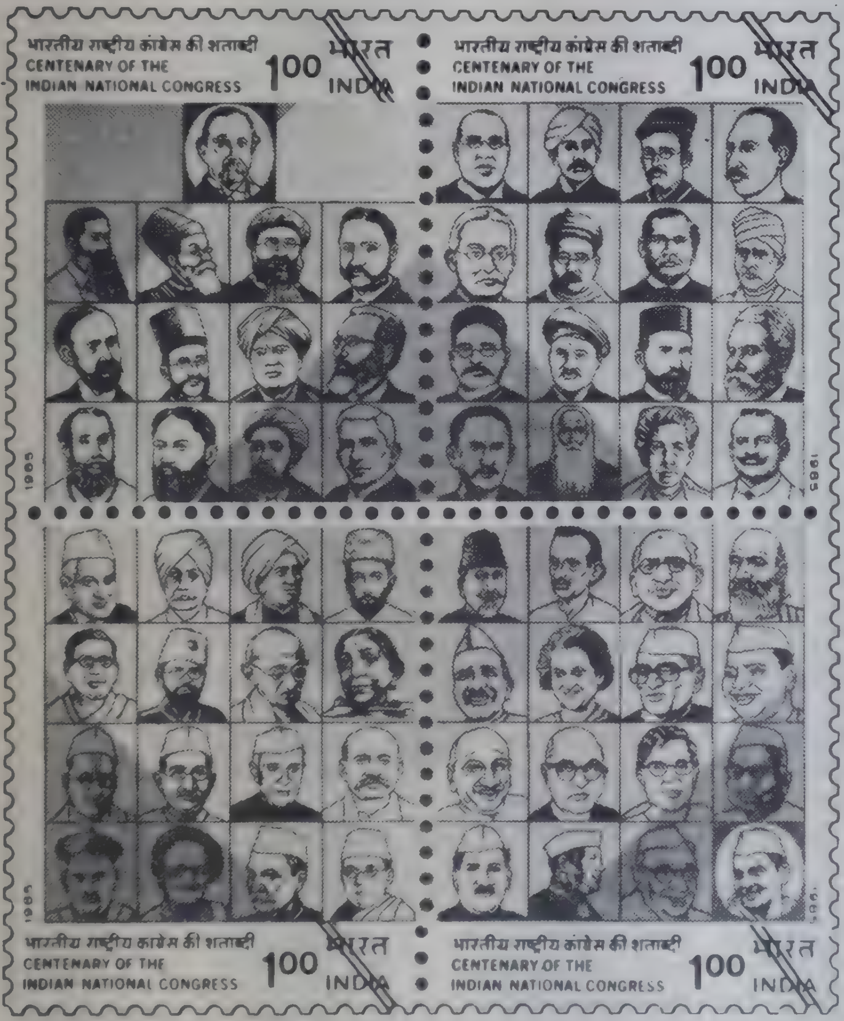
In 1906 the police broke up a Congress conference in Barisol (Calcutta). The delegates were lathi-charged. Eminent leaders were man-handled by the police. This unprecedented treatment meted out to a peaceful gathering led to a radical change in the character of the national movement.

Hereafter, force was to be met by force. The white man's blood was to atone for the innocent blood drawn from inoffensive nationalists. This was a victory for the extremists. A crop of revolutionary leaders emerged—Aswini Kumar Dutt, Brahma Bhandhab Upadhyaya, Arobindo Ghosh, Lajpat Rai and Bal Gangadhara Tilak. Tilak was from Maharashtra, and easily led the others. In Bihar, Khaparde emerged as the leader and Lajpat Rai led Punjab.

Before terrorism was adopted as a general policy, isolated killings had taken place. Chaphekar brothers in Maharashtra had shot two British officers, Rand and Ayerst. But from 1906 onwards regular terrorism broke out. In this Bengal, as usual, led. B.K. Ghose, B.N. Dutt and B.B. Upadhyaya were the leaders behind the terrorist movement in Bengal. Arobindo Ghosh, then in Baroda came down to Calcutta, to reinforce the movement.

The most important terrorist organisation was *Anushilan Samithi* with its headquarters at Calcutta. In East Bengal, Dacca became the main centre. The Anushilan Samithi ostensibly an organisation for promoting physical development and social welfare, soon found followers all over India. The growth of terrorist activity was deplorable but in the circumstances inevitable.

Swadeshi Movement. Originally this movement had affected only established cottage industries—particularly handloom textiles. Now bigger entrepreneurs came on the scene, establishing heavy industries.



Facsimile of stamps bearing the pictures of Congress Presidents brought out on the occassion of Congress centenary in 1985

Similarly, the boycott of British goods continued on a greater scale than before. Bonfires of foreign goods were conducted on a large scale in all big cities.

The sales of textiles in eight districts of Bengal fell from Rs 77,000 in 1904 to Rs 10,000 in 1905. Twenty new cotton mills were started in Bombay and Ahmedabad. 15 new banks and 5 shipping companies were floated. Thus there was an overall increase of big industrial units in several spheres.

While everybody supported the Swadeshi movement many disapproved of the boycott programme and still more, the terrorist activities. Their main fear was that this would alienate British public sympathy for Indian

Land-marks In 100 Years.

Ramsay Mac-Donald would have presided over the 26th session of the Indian National Congress in 1911 at Calcutta had not his wife died. He later became the Prime Minister of the United Kingdom.

* * *

Phirozshah Mehta, president-elect of the 24th session at Lahore in 1909, suddenly decided not to attend it following Lady Mehta's warning that Surat would be repeated.

The 1907 Surat session ended in chaos. Lokmanya Tilak faced an audience of fist-shaking 'moderates'.

He defied their threats only to have a shoe aimed at him which instead struck Surendranath Banerjee and canoned off Phirozshah Mehta. The rest was chaos, as delegates struck at anyone who looked like a moderate.

* * *

At the 22nd session at Calcutta in 1906 the party accepted the aim of "swaraj". Kadabhai, presiding over the session for the third time, introduced this expression.

However, it was Tilak who picked it up and made it into a movement for mass awakening.

* * *

Dadabhai died before the 32nd session at Calcutta in 1917. Tilak died three years later and his political opponent, Gopal Krishna Gokhale left the scene before the 30th session at Bombay in 1915.

With the death of these stalwarts, the party entered a new phase under the leadership of Mahatma Gandhi and Motilal and Jawaharlal Nehru.

aspirations and harden the hearts of the rulers, just as the plagues of Egypt hardened the heart of Pharoah against the Israelites.

The Congress ranks sought a via media by appealing to Dadabhai Naoroji, the grand old man of India to preside over the Calcutta session in 1907. Dadabhai tried his best to placate both parties and proposed a new common platform for both, namely *Swaraj* or self-rule as the goal of the National Congress.

Hindu-Muslim Faction. Fuller, the Lt. Governor of the newly created East Bengal province, was a typical imperial bureaucrat. He exploited Hindu-Muslim differences of opinion to create faction. He openly supported the Muslim majority and discriminated heavily against the Hindu minority in the province. He let loose unbridled repression in East Bengal, humiliating and insulting respected Hindu leaders, ruthlessly punishing teachers and students and carefully discriminating between Hindus and Muslims at every turn.

Minto, the Viceroy, did not approve of Fuller's policy as it violated the spirit of the Central policy, that is an admixture of the carrot and the stick. The Secretary of State Morley fully endorsed the Viceroy's view point. Fuller did not agree with the views of his superiors in the matter and offered to resign rather than fight them. Fuller vacated the scene.

But the seeds of distrust and suspicion between Hindus and Muslims which he had sown sprouted. Already, the Muslims were chagrined at the Hindu religious rituals like fasting and tying coloured thread (*Raksha Bandhan*) which usually accompanied agitational programmes like boycott and picketing. The preferential treatment extended to Muslim government employees by Fuller at the expense of the Hindu employees made the Muslims loyal supporters of the imperial regime. The sudden termination of Fuller's services embittered the Muslim community but they were soon reassured by the Viceroy that there was no change of government policy towards the Muslims.

The Muslims, in fact, formed a political organization, tentatively named *Muslim League*, which published anti-Hindu and pro-government pamphlets. A *Red Pamphlet*, very much in circulation, claimed that the government was on their (Muslims') side, that crimes against Hindus, that is, looting Hindu shops, abducting Hindu women, etc.

CONGRESS PRESIDENTS 1885–1947

1885	W.C. Bannerjee
1886	Dadabhai Naoroji
1887	Badruddin Tyabji
1888	George Yule
1889	Sir William Wedderburn
1890	Sir Pherozeshah Mehta
1891	P. Ananda Charlu
1892	W.C. Bannerjee
1893	Dadabhai Naoroji
1894	Alfred Webb
1895	S.N. Banerjea
1896	Rahimtulla Sayani
1897	C.S. Nair
1898	A.M. Bose
1899	R.C. Dutt
1900	N.G. Chandravarkar
1901	D.E. Wacha
1902	S.N. Banerjea
1903	L.M. Ghosh
1904	Sir Henry Cotton
1905	G.K. Gokhale
1906	Dadabhai Naoroji
1907	Dr. Rashbihari Ghosh
1908	Dr. Rashbihari Ghosh
1909	M.M. Malaviya
1910	Sir William Wedderburn
1911	B.N. Dhar
1912	R.N. Madholkar
1913	Syed Mohammad Bahadur
1914	Bhupendra Nath Basu
1915	Sir S.P. Sinha
1916	A.C. Mazumdar
1917	Mrs. Annie Besant
1918	(Special Session) Hassan Imam
1918	(Annual Session) M.M. Malaviya
1919	Motilal Nehru
1920	(Special Session) Lajpat Rai
1920	(Annual Session) Vijayaragavachariar
1921	C.R. Das (In Prison) Acting President Hakim Ajmal Khan
1922	C.R. Das
1923	(Special Session) A.K. Azad
1923	(Annual Session) Mohammed Ali
1924	M.K. Gandhi
1925	Mrs Sarojini Naidu
1926	S. Srinivasa Iyengar
1927	Dr. M.A. Ansari
1928	Motilal Nehru
1929-1930	Jawaharlal Nehru
1931	Vallabhbhai Patel
1932	R. Amritlal
1933	Mrs. J.M. Sen Gupta
1934	Rajendra Prasad
1935	Rajendra Prasad
1936	Jawaharlal Nehru
1937	Jawaharlal Nehru
1939	Subhas Chandra Bose
	(Subhas Chandra Bose was re-elected but had to resign. Rajendra Prasad appointed in his stead)
1940–46	(Maulana) Abul Kalam Azad
1946 (July-Sept.)	Jawaharlal Nehru
1946–47	J.B. Kripalani

will be overlooked by the authorities. Morley welcomed the formation of such a League, characterising it as a "native opposition" to the Congress. The policy of *divide et empera* had begun, in earnest.

"In an atmosphere made tense by propaganda and counter propaganda," says Tara Chand, "it is not surprising that clashes occurred. Rioting had begun in Mymensingh district in April and May 1906 causing panic among the Hindus".

"Communal riots on a bigger scale occurred in 1907 at Comilla in Triperah district and in Jamalpur taluk of Mymensingh district". These riots were to become almost a daily occurrence everywhere in British India in future.

Congress Split. Differences of opinion regarding attitudes and policies to be adopted in the National Movement came to a head in 1907 when the Congress met at Surat. The moderates (doves) in the Congress who included such statesmen as Gokhale, Pherozshah Mehta, Surendranath Banerjee and Madan Mohan Malaviya were against the extremist programme of action, lest it should strengthen the anti-Indian stance of the British public.

The extremists who also contained a galaxy of celebrities like Tilak, Arobindo Ghosh, Bipin Chandra Pal and Lala Lajpat Rai had no faith in the bonafides of the British Indian government or in the goodwill of the pro-Indian section of the British public. Leaders of the extremist faction wanted to "capture the Congress and make it an instrument of revolutionary action".

The proceeding of the Surat session was marred by threats and counter threats. Utter lack of discipline characterised the session from the start. It ended just as ignominiously. The police had to interfere to close the meeting and to clear the pandal. The Congress had split.

The moderates retained control of the Congress. They met immediately after and drafted the new creed of the Congress. Only those who accepted the new creed were eligible for membership. This naturally excluded the extremists. The moderates, thus left alone, had to keep the Congress going as best they could.

Since Independence. There have been 15 Congress Presidents including the present President, Mr. Rajiv Gandhi since independence. Even though the congress split in 1969, the Election Commission on Jan. 12, 1971 and subsequently the Supreme Court, on Nov. 11, 1971, ruled that the faction led by Jagjivan Ram was the real Congress. On July 23, 1981, after the 7th Lok Sabha elections, the Election Commission finally recognised the Congress led by Mrs. Indira Gandhi as the legitimate organisation.

On the other side, the Congress faction opposed to Mrs. Indira Gandhi has been led by veterans like Messers S. Nijalingappa, Devraj Urs and Sharad Pawar. Mr. Pawar is the present President of the Congress (S). Also there have been other Congresses like Congress for Democracy (CFD) led by Mr. H.N. Bahuguna and Congress (J) led by Mr. Jagjivan Ram.

The following are the Presidents of the Indian National Congress since independence.

1948	Jaipur	Pattabhi Sitaramaiah
1950	Nasik	Purushotam Das Tandon
1951	Delhi	Jawaharlal Nehru
1953	Hyderabad	Jawaharlal Nehru
1954	Kalyan	Jawaharlal Nehru
1955	Avadi	U.N. Dhebar
1956	Amritsar	U.N. Dhebar
1957	Indore	U.N. Dhebar
1958	Pragyotishpur	U.N. Dhebar
1959	Nagpur	U.N. Dhebar
1960	Bangalore	Indira Gandhi
1961	Bhav Nagar	N. Sanjiva Reddy
1962	—	N. Sanjiva Reddy
1964	Bhubaneswar	K. Kamaraj
1965	Durgapur	K. Kamaraj
1966	Jaipur	K. Kamaraj
1968	Bangalore	S. Nijalingappa
1969	New Delhi	C. Subramaniam
1970	Delhi	Jagjivan Ram
1971	Ahamedabad	D. Sanjivayya
1972	Calcutta	Shankar Dayal Sharma
1975	Chandigarh	D.K. Barooah
1976	New Delhi	Brahmanand Reddy
1978	New Delhi	Indira Gandhi
1983	Calcutta	Indira Gandhi
1984	New Delhi	Rajiv Gandhi

REPRESSION AND REFORM

The year 1908 saw a hideous tug of war between the Government armed with powerful weapons of repression and an infuriated people putting up resistance with all their force of will and sacrifice against the onslaught of the other.

The natural result was that agitation went underground. Secret societies were formed everywhere and terrorism became their watchword. Bombs and bullets replaced hartals and processions. The government tied together all suspected persons into conspiracy gangs and prosecuted them wholesale.

Trials and convictions became the order of the day. Outstanding leaders were either imprisoned or deported. Bipin Chandra Pal and Lajpat Rai went into-self-imposed exile, Arobindo escaped to Pondicherry, a French enclave and Tilak remained incarcerated in Mandalay.

The Government of India armed itself with a series of extraordinary ordinances conferring arbitrary powers of arrest, detention and confiscation for even trivial infringements of the law. *The Explosive Substances Act 1908, The Indian Criminal Law Amendment Act 1908, The Newspapers (Incitement and Offences) Act 1908,* followed the *Prevention of Seditious Meetings Act 1907,* which was already in force. As an epilogue to the whole unsavoury set-up of laws came the *Press Act* *of 1910,* which was drawn up to close all loopholes in the Newspapers Act of 1908 and to make it more forbidding and intimidating.

Morely-Minto Reforms of 1909 provided for the greater association of qualified Indians with the Government in deciding public questions. One seat on the Governor General's Council was reserved for an Indian. Satyendra Sinha (later Lord Sinha of Raipur) was the first Indian to be appointed to the Governor General's Council as Law Member. The Governors' Councils of Madras and Bombay were enlarged to contain four members each. An Executive Council was formed in Bengal.

The composition and functions of the Legislative Councils were changed. The number of additional members to the Central Legislature was raised from six to a maximum of 60 of whom not more than 28 were to be officials. The Governor General had the power to nominate three non-official members to respresent specified communities. Two other seats were also reserved for nomination. The remaining 27 were to be elected from certain classes like landowners and organisations like Chambers of Commerce.

In the Provincial Councils, the maximum number of members was raised to 50 but the majority of them were to be officials and nominated members. The elected members were again to represent certain specified classes or bodies. The Muslim community was to get representation, through a separate electorate reserved for them. Thus, the principle of communal representation was constitutionally recognised for the first time.

If the reforms were intended to pacify unrest, they failed. The vicious chain of violence, repression and more violence remained unbroken. The mists of doubt and apprehension clouded the horizon.

This satisfied the policy makers in Delhi and London. What they wanted was to boost the Muslim League as a counter-weight to the Congress. They knew that the move was likely to create communal conflict and apparently welcomed it for that very reason.

Muslims Restive: The First World War brought Britain into conflict with Turkey, whose Sultan styled himself the Khalif of all Muslims. That the Khalifa to was in danger shook the passivity of the Indian Muslims and made them restive and thirsting for some sort of action.

The Montague-Chelmsford Report noted that though the Muslims as a whole kept aloof from revolutionary activities from 1903 to 1910 "since 1911 their attitude has been growing far less acquiescent". At the (Royal) Coronation Durbar held on December 12, 1911, two important announcements were made, one was the annulment of the partition of Bengal and the other the transfer of the capital from Calcutta to Delhi.

It was thought that the first would placate the Hindus and the second the Muslims. Both failed to evoke the expected responses.. Already, the partition of Bengal had become a side issue as far as the Hindus were concerned. The main issue became a larger share in the government of the country.

The transfer of the capital evoked little or no enthusiasm among the Muslims. One salutary effect was that the old Muslim leaders, who were preferred and pampered by the British found themselves practically ignored. Many of the oldtimers like the Aga Khan and the Nawab of Dacca left the League. Fresh blood like M. A. Jinnah and Muhammed Ali became the leaders of the organisation.

Close Again. The change in leadership helped to bring the Congress and League together. Both represented the middle class intelligentsia of India. The 1913 session of the League at Lucknow, foreswore the oft-repeated loyalty to the crown and adopted 'self-government under the aegis of the British crown' as its political goal. In 1915 the Congress and the League chose the same place (Bombay) for their annual conferences and most of the delegates of both organisations indulged in frequent exchange of ideas. Again in 1916, the Congress and the League met at the same place, Lucknow. At Lucknow the Congress conceded the Muslim demand for separate electorates and the Muslims responded by reducing their weightage in elections in the Muslim majority provinces of Punjab and Bengal. This agreement came to be known later as the *Lucknow Pact.*

With Turkey joining Germany against the allies in the first World War, the loyalty of the Indian Muslims to the British crown became suspect. The Muslim newspapers which supported Turkey were suppressed and repression was let loose on the Muslims.

Side by side, the British government adopted conciliatory tactics also, like promising that the Muslim holy places outside India will be protected by the allies. Meanwhile, Annie Besant who had joined the Congress joined hands with Tilak in demanding Home Rule for India.

Montford Reforms, so called after Montague, the Secreatary of State for India and Chelmsford the Viceroy are contained in the Government of India Act 1919. Before the Act was passed, the British made the historic announcement (Aug. 20, 1917) that the policy of H.M.'s Government... *"is that of increasing association of Indians in every branch of the administration and the gradual development of self-governing institutions with a view to the progressive realisation of responsible government in India as an integral part of the British Empire"*.

The Government of India Act 1919 provided, among other things, for two chambers of legislature at the Centre—the Legislative Assembly and the Council of State. The Assembly was to consist of 103 elected and 42 nominated members. All decisions of the legislature were subject to ratification by the Viceroy. In the provincial sector, a form of dyarchic government was established.

Khilafat Question. With the defeat of Turkey and the abolition of the Sultanate, the Khalifate ceased to exist. This agitated all Muslims in India. The Muslims of the world had no religious head. In 1919 a conference at Lucknow, sponsored by Muslim leaders, the Ali brothers—Muhammad Ali and Shaukat Ali—and Abul Kalam Azad decided to form an All India Khilafat Committee.

Seth Chotani of Bombay was elected President and Shaukat Ali, brother of Muhammud Ali, as the Secretary. Shaukat Ali, who was at the time in prison, was to take charge as soon as released.

Rowlatt Act, so-called after the President of the Committee, which was constituted to review the measures to be adopted to contain the national movement, sought to perpetuate the extraordinary powers conferred on the government during the war period. These were framed as 2 Acts (collectively known as the Rowlatt Act) which the Imperial Legislative Council dutifully passed in March, 1919.

Ire of All. This Act roused the ire of all Indians, Hindus and Muslims alike. Muhammud Ali Jinnah, later to become the President of the Muslim League and the founder of Pakistan, resigned his seat in the Council. In his letter of resignation to the Viceroy he wrote "In my opinion, a government that passes such a bill or such laws in times of peace forfeits the claim to be called a civilized government." The Rowlatt Act, in point of fact, proved a shot in the arm for the Khilafat movement.

As a protest against the arbitary provisions of the Acts, Gandhiji, on behalf of the Congress called for a *hartal* to be observed on April 6, 1919 all over India. The *hartal* was a complete success.

Punjab saw the worst manifestation of British power. Its Governor, Michael O' Dyer seemed to love brutal savagery. He warned the public that they would be held responsible for the proper conduct of the public meetings and for the language used in the speeches. On the 10th April, when the news of Gandhiji's arrest reached Lahore, the students took out a protest procession. The police opened fire on the unoffending processionists wounding many.

Worse was the fate of Amritsar, which held protest demonstrations. Satyapal and Kitchelew wer prohibited from speaking at Amritsar and were arrested for deportation. The news of deportation infuriated the people. Crowds marched to the Deputy Commissioner's office to demand the cancellation of the order of deportation. Mounted police fired upon the crowd, killing some and wounding many.

Jallianwallabagh. A protest meeting against this outrage was arranged at Jallianwallabagh on the 13th. The government, in anticipation of trouble, handed over Amritsar to the army under the command of General Dyer. Jallianwallabagh turned out to be a deadly trap. An enclosure, protected by high walls, had only one small entrance on one side and three or four small openings on the other. As the crowds filled the enclosure, Dyer and his troops appeared at the main entrance and bullets rained on the crowd.

India a Potential Success Story

'Forbes' magazine says Brazil, South Korea, India and China are likely to be economic successes of the 21st century.

An article in a 1986 issue of the leading American business fortnightly claims that the United States' four decade-old domination of the world economy is coming to an end.

Among probable winners in the 21st century, the article lists Brazil at the top, followed by South Korea.

"As for the third place, there is a tie between India and China. Both China and India should have substantial and sustained rates of growth — but an important if is keeping government from their throats."

"Enthusiasm for India is based on several things. For one, it has an energetic work force with a tremendously talented business class. It has achieved self-sufficiency in oil.

"India has already a number of strong export industries, it has the potential, like China, to be a very effective export competitor.

India's 1978-84 growth rate was a snappy 5.6 per cent a year. It should not have trouble maintaining that. By 2006 A.D. its gross national product (GNP) could easily top $ 500 billion.

* * * * * *

Coopers and Lybrand, which conducted a survey of the views of senior executive officers of over 50 large multinational corporations headquartered in North America, Europe and Asia, expects India's gross domestic product (GDP) to grow annually at an average of 7.64 per cent during 1985-2000.

For the Indian sub-continent as a whole, the projection last year was 7.65 per cent for the next 15 years. Now it is 7.34 per cent.

The report says the Third World, especially the Pacific rim, the Indian sub-continent and Latin America, provided increasingly important competition and markets in 1985.

The growth rate projection of 7.64 per cent a year on the average for the next 15 years for India, contrasts with 3.84 per cent achieved in 1984-85 and 3.99 in 1983-84.

The rate projected for India for the next 15 years is higher than that forecast for China. The Chinese rate was forecast last year at 4.96 and has been lowered to 4.20, though China actually achieved 5.52 in 1984-85 and a whopping 13.32 per cent in 1983-84

The report says: "Over the past five years, India has emerged as a very interesting developing country from a business point of view. It has become self-sufficient in food production, leading to food exports. It has a large production, with a sizable well-educated segment.

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The latest appraisal made by the World Bank shows that India is not only the "most active borrower" but also the fastest in utilising aid, putting it to the most efficient use.

Indonesia and Brazil have been rated as the second and third most active borrowers. In relation to the International Development Association, the bank appraisal shows that in the current financial year, IDA has been most active in India, Bangladesh and China — in that order.

India is perhaps the only country in the world which has the highest net transfer of resources from the bank. In the case of most other countries, the new loans made by the bank are even less than the repayments that those countries have to make to the bank for past loans.

As the loans sanctioned for India accumulate every year, the unutilised part of this total accumulation also increases proportionately. For instance, in 1982, the total loans sanctioned for India by the bank amounted to a little over $ 15 billion and the unutilised credits stood at $ 4.9 billion.

"In the case of India, fiscal year 1986 disbursements amounted to $ 364.6 million, thus showing an increase of 52.6 per cent over the last year. The increase in IBRD disbursements in fiscal year 1986 was thus amongst the largest in the case of India.

"Bankwide IDA disbursements were $ 3.15 billion, showing an increase of 26.5 per cent while the corresponding figures in the case of India were $ 1.001 billion and 24 per cent respectively."

Men died in hundreds, while most of those who sought escape through the narrow openings on the other side were crushed to death in the melee. The massacre at Jallianwallabagh was an act of unprovoked savagery, unequalled in history. It shook the country from end to end.

The first Khilafat Conference was held at Delhi on the 23rd November, 1919. It was presided over by Fazlul Huq. Gandhiji, Motial and Malaviya among the Congress leaders were present. On the second day Gandhiji was voted to the chair. In 1920, when the Congress Committee met at Delhi, Gandhiji presented a programme of ***non-cooperation*** which was accepted by the Committee.

A few days later the Khilafat Conference also accepted the programme of non-cooperation. In June 1920, the Khilafat Committee met at Allahabad and endorsed the non-cooperation movement in full. This included surrender of titles and honorary posts, resignation from the civil service and the army and refusal to pay any sort of tax.

Non Co-operation. A special session of the Congress in September 1920 ratified the non-cooperation movement. The Congress resolution was strongly supported by the Jamat Ulam-I-Hind, calling upon all Muslims to participate fully in the movement.

At the next session of the Congress at Nagpur, a new constitution was adopted for the Congress, which enabled it to act as a permanently functioning organisation. Gandhiji explained the non-cooperation movement as a positive movement. "Complete Civil Disobedience", he said, "is a state of peaceful rebellion—a refusal to obey every single state-made law". The new movement caught the imagination of the masses. The educated middle class was already in ferment.

Leading lawyers like Motilal Nehru and C. R. Das, gave up their profession. Subhash Chandra Bose resigned from the Indian Civil Service. From the 1st August 1920 when it started to 6th February, 1922 when it was suspended, the non-cooperation movement moved in a crescendo. The boycott of foreign clothes and bonfires were becoming popular in big cities like Calcutta, Bombay, Madras and Allahabad. The non-cooperation movement was a roaring success.

Chawri Chawra. On the 15th Feb., 1922 a small town Chawri Chawra in the district of Ghorakpur in U.P. became the scene of a violent clash between the police and some processionists. The police took refuge in the station but the mob set fire to it. Gandhiji responded by suspending the non-cooperation movement, as he considered Chawri Chawra an open violation of non-violence.

The sudden suspension of the movement occasioned violent differences of opinion. Most of the Khilafists lost faith in Gandhiji's leadership. Taking advantage of this division in nationalist ranks, the government arrested Gandhiji on March 10, 1922. He pleaded guilty and asked for the severest punishment. He was convicted to 6 years imprisonment and confined to the Yervada Central Prison in Pune (then Poona).

The Congress met in Gaya in December, 1922 under the Presidentship of C. R. Das. A Committee appointed to enquire into the civil disobedience movement, opined that the country was not prepared to continue the movement and recommended that cooperation with the government under the Montford Reforms would be more helpful to the national cause. This meant entering the legislative councils. However, a resolution to this effect was defeated. C. R. Das resigned from the Presidentship on January 1, 1923. He and Motilal Nehru formed the Swaraj Party.

Khilafat Movement, however strong, had ultimately to fizzle out.

Swaraj Party founded by C. R. Das and Motilal Nehru was desirous of working the Montford Reforms, while the Nationalists or Extremists were opposed to it. The Swaraj Party consisting of Moderates and Liberals, contested the 1920 elections and some of them were elected, Srinivasa Sastri and Sivaswamy Iyer among others. They formed a sort of opposition and succeeded in defeating many government motions and abolishing certain obnoxious acts as the Press Act of 1910.

In 1921, the second election for the Central Legislature was held. By the time, many provinces were having their elected Councils. Here also, the Swaraj Party made itself a political force. In the second Imperial Legislative Assembly the Swarajists captured 47 of 105 elected seats. The leader in the

Imperial Legislative Assembly was Motilal Nehru. He was ably assisted by a cadre of celebrities–Vithalbhai Patel, Ramaswamy Iyengar, Bipin Chandra Pal, and others.

The membership of the Councils offered tempting opportunities for ambitious men to aspire for influential positions and cushy jobs.

This naturally led to splits within the party. In June 1925, C. R. Das passed away. With that towering personality out of the scene, open disruptions appeared in the party.

The Viceroy–Lord Reading–took full advantage of the differing opinions in the Swaraj Party. He affirmed that the government had no ideas of changing its stand, and abolishing iniquitous Acts like the Bengal Ordinance. The Swarajists, finding themselves thwarted at every session, walked out of the Assemblies. Even then, there were a number of leaders like Jayakar, Kelkar, etc. among them who chose to continue cooperation with the government. They formed a new party, the *Responsive Cooperation Party*. It was still-born.

PACTS AND CONFERENCES

The prerequisite of 'Swaraj' or independence was an accord between the Hindus and the Muslims. All leaders were agreed on it. The Hindu majority believed that *Swaraj* meant *Muslim Raj* while the Muslim minority was afraid that the Hindu majority would swamp them.

By 1906, the Muslims expressed their fears by demanding separate electorates. The British Indian Government was only too glad to accommodate Muslims. The Government openly favoured the Muslims, on the ostensible ground that they were a minority and needed protection.

During the early years of non-cooperation, it appeared that the two communities came together. But then there was the Khilafat movement to link them together.

Moplah Rebellion. The Moplah (Muslims) rebellion of 1921 in Kerala (then British Malabar) transformed itself as the massacre of Hindu landed families, destruction of Hindu properties and Hindu temples. Even forcible conversion of some Hindus was reported.

The revival of the Hindu Maha Sabha in 1923 added fuel to the fire. In 1924, communal troubles seemed to hold the whole of India in its diabolic grip. Its worst manifestation was at Kohat (North West Frontier Province) on the 9th and 10th September 1924. There were large scale killings of Hindus and looting of Hindu properties and the Hindu population had to be evacuated from the town.

The suspension of the non-cooperation movement following the Chawri Chawra incidents and the vaporisation of the Khalifate (1924) left nationalist India in a political vacuum. Gandhiji felt that before further political agitation was taken up an organisational and educative build-up was necessary. Although his term of imprisonment extended to 1928 he was unconditionally released in 1924 for reasons of health.

Khaddar . Presiding over the Belgaum Conference in 1924 he laid down the basic programme. He told the delegates, "Go throughout your districts and spread the message of *Khaddar,* the message of Hindu-Muslim unity and the evils of untouchability and take up in hand, the youth of the country and make them the real soldiers of Swaraj".

He called upon the conference to adopt as the basic qualification of a Congressman, spinning 2,000 yards of yarn a month, instead of contributing four annas as membership fee. He went round the country spreading the message of Khadi. The response was over-whelming. In September 1925 he called together a meeting of the All India Congress Committee (AICC) in which the political and economic wings of the Congress were separated.

The political programme was to be handled by the Swarajist members of the Congress while the Khadi programme would be taken up by the All India Spinner's Association as an autonomous organisation working within the framework of the Congress. All

Congressmen were called upon to wear only Khadi materials and nothing else.

Year of Silence. In 1926 he retreated to his Ashram at Sabarmati and spent an year of silence, during which he concentrated on the expansion and consolidation of the Khadi programme. On the termination of his year of silence, he declared, "I have come to the conclusion, that we can have Swaraj, even Rama Raj, if we fulfil the triple programme—that is Khadi – Hindu-Muslim unity and the abolition of untouchability".

In the meantime, the Swarajists and Nationalists in the Indian legislatures were demanding that Indians should participate effectively in the administration of the country. Lord Birkenhead (1925) 'Secretary of State for India' derided the idea of Indian nationhood in the House of Lords. He said, "To talk of India as an entity is as absurd as to talk of Europe as an entity...There never has been such a nation. Whether there will be such a nation, the future alone can show".

While the political terrain looked like a desert and hopes of independence a mirage, communal riots continued to rock the country. In Calcutta, Swami Shraddananda was murdered by a Muslim fanatic. In 1927 the Frontier Muslims rose against the Hindus which led to their exodus to Peshawar.

Simon Commission. In 1927 a Parliamentary Commission was appointed to look into the question of Constitutional Reforms for India and make suitable recommendations. The Commission was headed by Sir John Simon, a leading constitutional lawyer of Britain and a member of Parliament.

The Commission visited India in 1928 and toured throughout the country collecting evidence. The Congress boycotted the commission. The Liberal Federation led by Sir Tej Bahadur Sapru did the same. Even the Muslim League joined the boycott.

While the Commission doggedly pursued its programmes seemingly oblivious of stormy scenes and angry protests, the Government of India felt the impact of the storm and was forced to do something to appease the Indian public. In 1929 Lord Irwin, the Viceroy declared that the natural issue of India's Constitutional progress is the attainment of *Dominion status*. The statement also proposed to hold a Round Table Conference on the subject as soon as possible.

Watered Down. The statement which left the Simon Commission "high and dry" raised more storms in the British Parliament than anywhere else. Can a Parliamentary Commission be put aside in such a manner? Where was the justification for announcing Dominion Status as the objective of the British policy in India? The net result was that the concept of Dominion Status was watered down to nothing while the formation of the Round Table Conference remained a dubious proposal.

Meanwhile on March 16, 1927 the Council of State passed a resolution at the instance of C. Sankaran Nair recommending to the Government that no steps towards responsible Government be taken until Hindus and Muslims agreed to dispense with separate electorates.

This resolution brought forth a spate of inter-party negotiations – between various parties and different persons and at differing levels. While there was a general agreement on joint electorates with reservation of seats for Muslims someone or another raised objections on one point or another all the time. This obstructed any final solution. Thus the negotiations dragged on till the end of 1929, when the Congress came out with the outright declaration on 31st December 1929, that "the word Swaraj in Article 1 of the Congress constitution shall mean complete independence".

Dandi March. While the talks continued Gandhiji decided to launch Satyagraha and advised the Viceroy about his decision. His first act was to go to Dandi and make salt which was then a government monoploy. He set out on the march at the age of 61 in March 1930. He reached Dandhi with his followers on April 5, 1930. He walked into the sea waters and returning took a lump of salt from the salt fields and thus violated the law.

All repressive laws were soon brought into force. The repealed Press Act of 1910 was revived. Gandhiji and a lot of other outstanding leaders were arrested. In the agitation that followed some 100,000 persons were reckoned to have been imprisoned.

It was expected that with the incarceration of Gandhiji on May 5 at Yervada Jail and the imprisonment of the other leaders the movement would dissipate. The effect was just the contrary. Satyagraha became a way of life for millions of Indians and the leaderless movement grew apace every day On June 2 Lord Irwin the Viceroy wrote..."the movement is serious and has permeated many strata of Indian society. It has caught their imagination and swept them off their feet and obviously has dangerous potentialities".

First Round Table. In the face of the growing agitations, the Government of India decided to summon a Round Table Conference in London. This was to consist of representatives of the following: (1) all India parties—moderates and extremists alike (2) communal organisations like the Hindu Mahasabha, the Muslim League, the Sikhs, Christians, etc. (3) land-owners and industrialists (4) special Indian groups like the Europeans or Anglo-Indians (5) Indian Princes (6) British Parliament members representing all parties. There were altogether 89 members.

Congress leaders like Gandhi who were in prison were not invited since they laid down a condition precedent for the Round Table, namely the announcement that *Poorna Swaraj* for India was the ultimate objective of the Round Table.

The First Round Table Conference was opened by *King George V* on November 12, 1930. The King observed, "Ten years is but a brief span in the life of any nation but the decade has witnessed a quickening and growth in ideals and aspirations of nationhood, which defy customary measurement of time". This was only too true for the progress in nationalist growth during the decade was unique. If the Round Table achieved nothing else it evolved a new concept of true India—a federation consisting of the British adminisered Provinces and States ruled by Indian princes.

This was a magnificent objective, a "great and mighty conception", as Lord Reading put it. For the rest, the conference was a dismal failure.

The Round Table Conference having failed to achieve any subtantail solution of the Indian problem, and the civil disobedience movement going on with increasing momentum all repressive laws were brought into action again. It was only then that the British authorities realised that there can be no abiding solution of the Indian question, without the active cooperation of the Congress leaders. As a first step towards reconciling the Congress, Gandhiji and the other leaders of the Congress were released from jail on January 26, 1931.

Peace with Honour. Gandhiji on release felt that he wanted peace but with honour. Britain also wanted peace but without trouble. But first, the impasse had to be broken. So Gandhiji wrote to the Viceroy, asking for an interview. A pact was agreed upon during the interview. Gandhiji was spiritualism personified. Lord Irwin was a devout Christian at the bottom. It was this common character that blossomed forth as the Gandhi-Irwin Pact in March 1931.

The main points were (1) Federal character of free India (2) Participation of the Congress in all negotiations (3) Civil Disobedience movement will be discontinued (4) Boycott of British goods may be resorted to on a propagandist basis but not as a political weapon (5) Picketting and boycott activities may be carried on but without offending the existing laws (6) Ordinances promulgated to countenance Civil Disobedience movement and consequential acts following upon them, like prosecutions and confiscations, will be rectified as far as they were possible of rectification

The Gandhi-Irwin pact was ratified by the conference at its Karachi Session presided over by Vallabhai Patel on March 29, 1934. The *Second Round Table Conference* which opened on the 7th September 1931 was distinguished by the fact that the Congress participated and was represented by Gandhiji as the sole delegate of the Congress.

By this time, a National government by Ramsay Macdonald was formed in Britain. It wa dominated by the Conservative Party. Sir Samuel Hoare succeeded Wedgewood Benn as the Secretary of State for India, while Lord Willingdon replaced Irwin as Viceroy. This change complicated matters. The British authorities wanted to exploit the communal tangle to the utmost.

Thorny Question. There were more than 104 members for the Second Round Table including Gandhiji. The Muslim question had already become acute with extremists gaining the upper hand in the Muslim League. In April 1931 the All India Muslim League declared their minimum programme which contained 10 demands: (1) autonomy of the federating units (2) Residuary Powers for the States (3) Transfer of power to Provincial governments (4) Federal subjects to be selected by the consent of the provinces (5) No difference in the powers exercised by the British provinces and the Indian States (6) One-third of Federal seats to go to the League (7) Muslim majority rule in Muslim-majority provinces (8) Separate communal electorates (9) Muslim members in both Federal and Provincial cabinets (10) No legislation in communal matters, if the ¾ of the community members objected.

A Minorities Sub-Committee was appointed by the Second Conference, presided over by the British Prime Minister. Here all minor groups agreed with the Muslim League on one point— that their inerests should be maintained and protected, whatever form the Constitution assumed. It was difficult to provide such a blanket assurance to all minorities big and small. The conference concluded without reaching any decision.

When Gandhi returned to India in December 1931 the country was labouring under a load of repressive laws called Ordinances. 15 Ordinances were passed in 1931 alone. The only remedy left was to resume civil disobedience.

In the North West Frontier Province Abdul Gaffar Khan (since known as the Frontier Gandhi) raised a volunteer corps of one lakh Pathans called the Servants of God and affiliated it to the Congress. In Bengal, terroism began again. The Government issued more harsh and stern Ordinances, including the muzzling of the press, detention of suspects and unfettered freedom for the executive to do whatever they thought fit.

In 1932 the working committee of the Congress called upon the nation to resume Civil Disobedience including nonpayment of taxes. Fresh ordinances were promulgated by the Government. All outstanding leaders of the Congress were arrested and imprisoned.

Communal Award. The Second Round Table having failed to solve the communal problem, the British Prime Minister took it upon himself to do it. In August 1932 Prime Minister Ramsay Macdonald announced the communal award. The Award was based on the British theory that India was not a nation but congeries of racial, religious and cultural groups, castes and interests. The following minorities were recognised under the Award—Muslims, Depressed classes, Backward classes, Indian Christians, Anglo-Indians, Sikhs, Europeans, Landholders, Commercial and Industrial classes, Labour and Universities. These were given more than their legitimate shares of seats in the legislatures.

As a protest against the proposal Gandhiji started a fast on Sept. 26, 1932. The news sent a shiver through the nation. The leaders of the upper caste Hindus and those of the depressed classes met and came to an agreement on the question. This is known as the *Poona Pact*. They requested the Government to drop the proposal for separate electorates. The Government of India agreed to do so and Gandhiji broke his fast on Sept. 29, 1932.

The *Third Round Table* met in London on November 17, 1932 and continued its deliberations till December 24. This session was only a shadow of the earlier conferences. Jinnah was not invited. The princes were not interested and sent their ministers to the conference. Sir John Simon was one of the British delegates who attended. After the end of the conference the British Government published a White Paper which practically reproduced the Simon Commission recommendations but added a scheme for a Federal Government if the Princely States agreed. The White Paper in due course became the Government of India Act 1935.

Impractical. The Act of 1935 provided two alternate constitutions for the Central Government— one a Federal Government consisting of British provinces and Indian States, that is, if a majority of Indian States were willing to accede to the Federation. This never happened. The second alternative was to work the 1919 Act with some modifications. This was the alternative finally accepted. In this as in all previous Acts, the Governor-General had overriding authority in all matters.

Provincial constitutions proposed were markedly different from the previous ones. In the first place dyarchy was abolished. The provinces were considered autonomous and were to be governed by ministers chosen from the elected members. The Govenonr, though, still possessed overriding authority, it was understood that he would not interfere, until a crisis of some sort emerged.

The Act came into operation from April, 1937, so far as the provinces were concerned. The Central Government continued without any major change. After a lot of discussion whether the Congress should cooperate in working provincial governments, it was finally decided that it should. The Congress put up its own candidates in every province. So also did the Muslim League and lesser political parties.

The Congress won with a huge majority in five provinces—Madras, Bihar, Central Province, United Province and Orissa. In the other provinces Congress had acquired a sizeable number of seats. In 1937 the Congress took charge of the governments in seven provinces as interim ministries. In the remaining four provinces— Punjab, Bengal, Assam and Sind,—non-Congress parties took office.

The federal part of the new constitution, having been shelved, the Central Assembly of 1934 continued to function. It continued with 44 Congressmen led by Bulabhai Desai and 11 Nationlists under M. S. Aney. Independents who held the balance were led by M. A. Jinnah. The sole purpose of the Central Assembly was to show that it had no confidence in the Government. This was achieved by cut motions, rejections of the Budget, etc. These activities had little impact because the Viceroy had the ultimate power to certify any bill as passed.

THE PARTITION

Though partition of India broke into history suddenly and ruthlessly, it had been in the making for a long time. Its roots were visible in the Hindu-Muslim riots started as early as 1881 and continued intermittently.

The British administration took advantage of these riots so as to encourage the Hindu-Muslim conflict and perpetuate it. Ostensibly, three factors triggered communal riots: (1) Cow protection (2) Hindu-Urdu controversy and (3) Assertions of religious privileges on the occasions of festivals and holy days, especially when Hindu and Muslim calendars coincided.

These were only the apparent causes. The real reasons were more political than religious.

The formation of the All India Muslim League at Dacca (now Dhaka) in December, 1906, provided a focal point for Muslim political aspirations. When Muhammed Ali Jinnah became President of the League, he started defaming and devaluing the Congress, as a national organisation.

In 1937, when the Congress and the Muslim League started working provincial ministries, the rivalry between the two organisations came into the open.

In 1937, Jawaharlal Nehru wrote to Jinnah, "In the final analysis, there are only two forces in India today—British Imperialism and the Congress representing Indian Nationalism", Jinnah replied pointing out (1) that the Hindus and Muslims had nothing in common and (2) that the Muslims of India constituted a separate nation and therefore needed a separate state. The rift was complete.

Power Cut. The Congress suffered a great impairment of power by the separation of Jinnah. Jinnah, who had resurrected the League, towered above all other Muslim leaders and the Muslim community as a whole supported him. However, the Congress claimed some Muslim leaders, who were distinguished from the League adherents as nationalist Muslims. Abul Kalam

Azad was one such. The essential trouble here was that leaders like Azad were few and far between and commanded little mass support among the Muslim community. The British government openly supported the Muslim League. So the partition of India was only a question of time.

The outbreak of the Second World War, which commenced with Hitler's invasion of Poland on September 1, 1939, called for a complete change of policy on both sides—the British Indian Government and the National Congress. India was declared a belligerent nation by Britian on September 3, 1939, and the British Indian administration was placed on a war footing. The war lasted 6 years, till September 1945. During this period there was a lull in national agitation.

The Congress, as a whole supported the democratic allied countries, led by Britain but resented the fact that it was not taken into consultation in declaring India a belligerent nation. In the circumstances, all that the Congress could do was to call for an immediate assurance from Britain, that independence would be given to India, as soon as the war emergency was over.

Mass Resignation. The British Government paid no heed to this demand. The Congress reacted by asking all provincial Congress ministries to resign (October 1939). When the Congress ministries resigned, the Muslim League observed 'The Deliverance Day' from Congress rule on 22nd December, 1939. This was an indication of the increasing animosity between the two organisations.

In March 1940, at its annual session in Ramgarh the Congress demanded complete independence and a Constituent Assembly to draft a constitution for free India. In the same month, the Muslim League at its Lahore session demanded a separate state for the Muslims of India. In August the Viceroy announced that his Executive Council would be expanded to include more Indians, and a war advisory council established. Both the Congress and the League rejected the offer.

In March 1942, the British Government sent Sir Stafford Cripps to India with proposals for a new constitution. The Cripps' proposals were found unsatisfactory and were rejected both by the Congress and the League. In May 1942, Gandhiji called on Britian to "Leave India to God. If this is too much, then leave her to anarchy".

Quit India. In August 1942, the Congress working committee considered Gandhiji's call to Britain and passed the famous 'Quit India' resolution. If Britian did not take steps to quit India, as soon as possible, the Congress proposed to start Civil Disobedience. The Government retaliated by arresting Gandhiji and all the members of the working committee and declared Congress an unlawful organisation.

In 1945, Lord Wavell, the Viceroy, announced that he was holding a conference in Simla to consider the steps necessary to advance self-government for India in the near future. All Congress leaders, then in prison, were released. The Simla conference (June-July 1945) turned out to be a fiasco. But by the time, (July), a Labour Government came into power in Britain. The Labour Government took serious notice of the Indian situation.

The Labour Secretary of State for India. Lord Pethick-Lawrence announced that a parliamentary commission would be visiting India to negotiate the question of Indian independence. This delegation, later famous as the Cabinet Mission, announced its constitutional scheme, which implicitly recognised the right of the Muslims to have a state of their own. While the Muslim League accepted the proposals, the Congress rejected it.

While negotiations on the future constitution continued between the Congress and the League, on the one side and with the Government on the other, the League suddenly changed its tactics. It retracted its acceptance of the Cabinet Mission Plan and declared August 16 (1946) as a Direct Action Day. It was an invitation for communal riots. The Muslims started slaughtering Hindus in all areas, where they were numerically superior. The Great Calcutta Killings of August 16 to 18 were the first of the riots. Then followed the killings in West Punjab, where the Muslims were in a majority. The Congress in desperation demanded a partition of Punjab.

Lord Mountbatten who succeeded Wavell as Viceroy in March 1947, boldly announced the partition of India. The provinces where the Muslims formed the majority were to be constituted into a separate state—Pakistan.*

Thus, parts of Punjab (West Punjab) and Bengal (East Bengal) and the whole of the provinces of Sind, Baluchistan and the North West Frontier became Pakistan. The rest of India formed another State. The Indian Independence Act, passed by the British Parliament (July 1947), formalised the division of India into two fully independent states—India & Pakistan.

FATHER OF THE NATION

Mohandas Karamchand Gandhi (1869-1948), when he entered public life, was at first hailed as the Mahatma (Great Soul) and was generally called Mahatma Gandhi. Since his death he has been universally acclaimed as the Father of the Nation.

Gandhiji started his public career in South Africa, where the white race ruled and Indians and native Africans alike were treated as slaves and outcasts. He entered Indian public life through the Indian National Congress, which he dominated from 1920 onwards. He was the main architect of the Indian nation and is rightly called the Father of the Nation.

The important dates and events of his life are briefly described below:

Gandhian Chronology. 1869: Oct. 2: Born at Porbandar, Kathiawar, India, son of Karamchand and Putlibai Gandhi. 1883: Married Kasturba. 1888: Sailed from Bombay for England to study law. 1891: Summer: Returned to India after being called to the Bar. Began to practise law in Bombay and Rajkot.

1893: April: Sailed for South Africa to become lawyer for an Indian firm. Found himself subjected to colour discrimination. 1894: May: Organized the Natal Indian Congress. 1899: Organized Indian Ambulance Corps for British in Boer war. 1901: Embarked with family for India.

1901-2: Travelled extensively in India, attended Indian National Congress meeting in Calcutta and opened law office in Bombay. 1902: Returned to South Africa at the request of the Indian community. 1904: Established the weekly journal 'Indian Opinion', Organized Phoenix Farm near Durban.

Homage to the Mahatma: The 8-foot statue of Gandhiji unveiled in New York's Union Square on October 2, 1986, on the occassion of his 117th birth anniversary.

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* The name Pakistan and the idea of a partition were first suggested by Chowdhry Rahmat Ali, a student of the Cambridge University in 1930. In his pamphlet 'Now or Never', published in 1933, Rahmat Ali advocated the idea of a partition. At the time, however, Muslim leaders scorned the idea as childish.

1906: Sept: First 'satyagraha' campaign in protest against proposed Asiatic ordinance directed against Indian immigrants in Transvaal. 1907: June: Organized 'Satyagraha' against compulsory registration of Asiatics (The Black Act).

1908: Jan: Stood trial for instigating 'satyagraha' and was sentenced to two months imprisonment in Johannesburg jail (his first imprisonment). Summoned to consult General Smuts at Pretoria; compromise reached; was released from jail. Feb: Attacked and wounded by Indian extremist for settlement with Smuts. Aug: After Smuts broke agreement, second 'satyagraha' campaign began with bonfire of registration certificates.

Incarcerated. 1909: Feb: Sentenced to three months imprisonment in Volksrust and Pretoria jails. June: Sailed for England to present Indian's case. 1910: May: Established Tolstoy Farm near Johannesburg. 1913: Sept: Helped campaign against nullification of marriages not celebrated according to Christian rites. Third 'satyagraha' campaign. Led 2,000 Indian miners from New Gastle across Transvaal border. Nov: Arrested for third time in four days. Dec: Released unconditionally in expectation of a compromise.

1914: July: Returned to India, leaving South Africa for ever. 1915: May: Established Satyagraha Ashram near Ahmedabad.

1917: Moved Ashram to new site on Sabarmati River. Led successful 'satyagraha' campaign for rights of peasants on indigo plantations in Champaran. Defied order to leave area in April, was arrested at Motihari and tried, but case was withdrawn.

1918: Feb: Led strike of millworkers at Ahmedabad. Millowners agreed to arbitration after his three-day fast (his first fast in India). March: Led 'satyagraha' for peasants in Kheda). April: Organised nationwide hartal—suspension of activity for a day—against the Rowlatt Bills. Fasted at Sabarmati for three days in penitence for violence and suspended 'satyagraha' campaign which he called a 'Himalayan miscalculation' because people were not disciplined enough. Became Editor of English weekly 'Young India' and Gujarati weekly 'Navajivan'.

Non-Co operation. 1920 April: Elected president of All India Home Rule League. Successfully urged resolutions for a 'satyagraha' campaign of non-cooperation.

1921: Resolved to wear only a loin cloth to propagate homespun cotton and to signify his identification with the people. Mass civil disobedience, thousands went to jail. Gandhi invested with 'sole executive authority' on behalf of Indian Congress.

1922: Suspended mass disobedience because of violence at Chawri Chawra and undertook five-day fast of penance at Bardoli. Arrested at Sabarmati on charge of sedition for articles in 'Young India'. Pleaded guilty in famous statement at the 'great trial' in Ahmedabad before judge Broomfield. Sentenced to six years' imprisonment in Yeravada jail.

1929: Arrested for burning foreign cloth in Calcutta and fined one rupee. 1929 Dec: Congress session at Lahore voted for complete independence and a boycott of the legislature. January 26 proposed as National Independence day. Third all-India 'satyagraha' campaign.

1930: March 12: Set out from Sabarmati with 79 volunteers on historic Salt March 200 miles to sea at Dandi. April 6: Broke salt law by picking a handful of salt up at seashore. Arrested by armed policemen at Karadi and imprisoned in Yervada jail without trial. One hundred thousand persons arrested.

1931: Jan: Released unconditionally with 30 other Congress leaders. March: Gandhi-Irwin (Viceroy) Pact signed, which ended civil disobedience. Aug: Sailed from Bombay for the Second Round Table Conference in London. Dec: Returned to India. Authorised by Congress to renew 'satyagraha' campaign (fourth nationwide effort).

Fast unto Death. 1932: Jan: Arrested in Bombay with Sardar Patel and detained without trial at Yervada prison. Sept. 20: Began 'fast unto death' while in prison in protest of British action giving separate electorate to untouchables. Sept. 26: Concluded "fast" in the presence of Rabindranath Tagore after the British accepted 'Yervada Pact'.

1933: Began weekly publication of 'Harijan' in place of 'Young India'. July: Disbanded Sabarmati Ashram which then became centre for removal of untouchability. Nov: Began ten-month tour of India to help end untouchability. Nov: Kasturba arrested and imprisoned for sixth time in two years.

1934: Summer: Three separate attempts made on his life. Oct: Launched All India Village Industries Association. 1940: Oct: Launched limited, individual civil disobedience campaign against Britain's refusal to allow Indians to express their opinions regarding World War II. 23,000 persons imprisoned within a year.

1942: March: Met with Sir Stafford Cripps in New Delhi but called his proposals 'a postdated check' these were ultimately rejected by Congress. Aug: Congress passed 'Quit India' resolution—the final nation-wide "Satyagraha campaign" with Gandhi as the leader. Aug 9: Arrested with other Congress leaders and Kasturba and imprisoned in Aga Khan Palace, near Poona, with revolts in many parts of the country.

1943: Feb 10: Began fast at Aga Khan Palace to end deadlock between Viceroy and Indian leaders.

Kasturba Dies. 1944: Feb 22: Kasturba died in detention at Aga Khan Palace at the age of 74. May 6: After decline in health, was released unconditionally from detention (this was his last imprisonment; he had spent 2,338 days in jail during his life-time). Sept: Important talks with Jinnah of Muslim League in Bombay on Hindu-Muslim amity.

1946: Nov: Began four-month tour of 49 villages in East Bengal to quell communal rioting over Muslim representation in provisional government.

1947: March: Toured Bihar to lessen Hindu-Muslim tensions. Began conferences in New Delhi with Lord Mountbatten and Jinnah. May: Opposed Congress decision to accept division of country into India and Pakistan. Aug 15: Fasted and prayed to combat riots in Calcutta as India was partitioned and granted Independence. Sept: Visited Delhi and other neighbouring areas to stop rioting and to visit camps of refugees.

Martyrdom. From 1946 onwards, Gandhiji's efforts were concentrated on effecting Hindu-Muslim accord. Hindu-Muslim riots had broken out all over India, ever since the League President, Jinnah, rejected the Cabinet Mission Plan and proclaimed August 16, 1946 as Direct Action Day. It was never clarified what Direct Action really involved. But the Muslim response was instantaneous and murderous. They started killing Hindus, wherever they (Muslims) held numerical superiority. The great Calcutta killings of August 16/18 were the first bitter harvest of the Direct Action Day. Then the killings spread to all areas, where the Muslims were enjoying a majority. Gandhiji visited many of these areas—Naokholi for instance—to restore communal amity. But these visits brought forth no substantial change.

So, on January 13, 1948 Gandhiji undertook a fast for 5 days to bring about communal unity. On January 30, while holding a Prayer Meeting at Birla House, Delhi, Gandhiji was shot dead by a Hindu fanatic Nathuram Vinayak Godse, who was deadly opposed to Gandhiji's efforts to bring about Hindu-Muslim amity. Thus ended the life of the greatest Indian since the Buddha.

FREEDOM AND AFTER

British Government announced on Feb. 20, 1947 its intention to quit India by June 1948. Lord Mountbatten was named Viceroy to arrange the transfer of power. He assumed office on March 24 and broadcast his plan for a partition of India.

1947: British Parliament passes the India Independence Act (July 1) and fixes Aug. 15 for the transfer of power. Partition of India into India & Pakistan. Power transferred to India and Pakistan. Lord Mountbatten becomes Governor General of India and M. A. Jinnah Governor General of Pakistan (Aug.15)

1948: Assassination of Mahatma Gandhi (Jan. 30). Death of M. A. Jinnah (Sept. 11). The Government of India occupies the Nizam's dominions (Hyderabad State). 1949: Constitution of India adopted by the Constituent Assembly (Nov. 26). 1950: Constitution of India comes into force (Jan. 26). Sardar Patel dies (Dec. 15). 1951: The First General Election in India. First Amendment to the Constitution. 1952: Dr. Rajendra Prasad elected Rashtrapati (Head of State). Second Amendment. 1954: Panch Sheel agreement between China and India. Third Amendment.

Socialism Adopted. 1955: Avadi Session of the Indian National Congress adopts a socialistic pattern of society for India. 4th and 5th Amendments. 1956: Life Insurance nationalised. 6th and 7th Amendments. States Reorganisation Act. 1957: Second General Election. Rajendra Prasad re-elected for a second term.

1958: Metric system of weights and measures introduced. 1959: Swatantra Party formed. 8th Amendment. 1960: Bombay bifurcated into Maharashtra and Gujarat States. 9th Amendment. 1961: India occupies the Portuguese enclaves of Goa, Daman and Diu. 10th and 11th Amendments.

1962: Third General Election in India. Dr. Radhakrishnan elected President. Nehru forms the third Congress ministry. China attacks India on the northern border (Sept. 19). 12th, 13th and 14th Amendments. 1963: Gold Control Order. Rajendra Prasad dies (Feb. 28). Nagaland becomes a state of the Indian Union. Union Territory of Goa forms its own cabinet and legislature. 15th and 16th Amendments.

Death of Nehru. 1964: Pandit Nehru, Prime Minister of India, dies, (May 27). Lal Bahadur Shastri becomes P.M. Communist Party of India splits into right and left—Communist Party of India (CPI) and Communist Party of India—Marxist (CPM). 17th Amendment.

1965: Indo-Pakistan war in the Rann of Kutch. Cease-fire in the Rann (June 30). 1966: Tashkent meeting between Lal Bahadur Shastri and Ayub Khan. Agreement reached. Shastri dies at Tashkent (Jan. 11). Indira Gandhi elected Prime Minister (Jan. 19). Dr. Bhabha dies in a plane accident. C. P. Ramaswamy Iyer dies (July 26). The States of Haryana and Punjab come into being. 18th, 19th and 20th Amendments.

1967: Opinion Poll in Goa. Goa decides to continue as Union Territory. Fourth General Election. Indira Gandhi elected Prime Minister. Dr. Zakir Hussain elected President. Earthquake at Koyna (Maharashtra). 21st Amendment.

Banks Nationalized. 1969: Madras State changes its name to Tamil Nadu. Zakir Hussain dies (May 3). V. V. Giri becomes Acting President. Nationalization of 14 leading banks by Presidential Ordinance (July 19). Giri resigns Acting Presidentship to contest the Presidential election. Chief Justice Hidayattulla takes charge as Acting President. Giri elected President (Aug. 20). G. S. Pathak Vice President. Cong. Party splits. Indira Gandhi forms her own Congress Party. Jagjivan Ram President of the Indira Congress. 22nd and 23rd Amendments.

1970: Supreme Court holds nationalization of banks illegal. Presidential ordinance revalidates nationalization (Feb. 14). West Bengal Ministry resigns. President takes over the government of West Bengal. State of Meghalaya comes into being (April 2). Kerala Ministry under Achuta Menon resigns. President takes over the government. Privy purses and special privileges of former Indian rulers abolished by Lok Sabha. Uttar Pradesh ministry dismissed. President takes over the government. Dr. C. V. Raman dies (Nov. 21). Supreme Court strikes down the Presidential order (in terms of the Lok Sabha resolution) abolishing privy purses and special rights to princes. President dissolves the Lok Sabha.

Bangladesh Born. 1971: President takes over the government in Orissa. Himachal Pradesh becomes a State (Jan 25). K. M. Munshi dies (Feb. 8). Indira Congress wins the mid-term elections for Lok Sabha. Indira Gandhi becomes P.M. General Insurance nationalized (May 13). President takes over administration in Punjab. Nationalization of 214 coal mines in West Bengal and Bihar. Presidential government in Tripura. Indo-Pakistan war begins. Pakistan attacks India in the west (Dec. 3). India recognises Bangladesh. Indian army marches into Bangladesh, joins hands with Mukhti Bahini of Bangladesh. Pakistan army in Bangladesh surrenders to the Indian Commander. Indo-Pak war ends (Dec. 17). 24th, 25th, 26th and 27th Amendments.

1972: Presidential government in Bihar. Manipur, Meghalaya and Tripura become states of the Indian Union. Arunachal Pradesh and Mizoram become Union Territories (Jan. 20). Presidential government in Manipur and Tripura. Election to State Assemblies March). Dacoits of Madhya Pradesh surrender to Jaya Prakash Narain (April). Government of India announces increase of minimum bonus to workers from 4% to 8.33% Sept. 18). Mulki agitation in Andhra Pradesh. P.M. announces in Parliament that Mulki rights (for preference in appointments) will continue for a limited period. C. Rajagopalachari dies (Dec. 28). 28th, 29th and 30th Amendments.

udges Superseded. 1973: President takes over the government in AP, Orissa and Manipur. Supreme Court endorses the ight of the Parliament to amend any part of he constitution, including Fundamental Rights without changing the basic structure. ustice Ajit Nath Ray named Chief Justice of he Supreme Court, superseding the three seniormost judges—J. M. Shelat, K. S. Hegde and A. N. Grover. Justices Shelat, Hegde and Grover resign in protest. Mohan Kumaramangalam, Central Minister, dies in an air crash near Delhi (May 31). President takes over Govt. in U.P. Prime Minister's 6-point plan for Andhra Pradesh settles the Mulki question. The Sixth Finance Commission ubmits its report (Oct. 28). Mysore changes s name to Karnataka (Nov. 1). E. V. Ramaswamy Naicker (EVR), founder of the Dravida Kazhakam, dies (Nov. 24). 31st and 32nd Amendments.

1974: President takes over the administration of Pondicherry (Jan 3) and Gujarat (Feb). General Elections in Orissa, UP, Manipur nd Pondicherry. Jaya Prakash Narain starts Citizens for Democracy' movement for leansing the administration and strengthening democracy. Atomic 'device' exploded at Pokran in Rajasthan (May 18). J. P. Narain leads an agitation for dissolution of the Bihar Assembly. India and Sri Lanka agree on the dministration of Kachatheev (island) in Palk traits. Sri Lanka is to have exclusive jurisdicion over the island (June 27). Compulsory Deposit Scheme announced (July 17). Fakhruddin Ali Ahmed elected President Aug. 20). B. D. Jatti Vice-President. J.P. leads popular morcha to the Bihar Legislature. The agitators lathicharged. J.P. suffers injuries. Bihar Bandh complete. Statewide hartal observed. Presidential ordinance prohibiting the courts from taking cognisance of detentions under MISA. Sucheta Kripalani dies (Dec. 1). Restoration of diplomatic ties between India and Portugal. 33rd, 34th and 35th Amendments.

Recognizes PLO. 1975: L. N. Mishra, Railway Minister, and 22 others hurt in bomb blast at Samastipur Railway Station. L. N. Mishra dies. (Jan. 2). India accords recognition to the Palestine Liberation Organisation (10). Oil struck in third Bombay High (11). Sheikh Abdullah becomes Jammu and Kashmir Chief Minister (24). 'People's March' to Parliament. J.P. presents charter to presiding officers of Parliament. J.P. leads 'People Morcha' to Bihar Vidhan Sabha (March 18). India recognizes Sihanouk Government in Cambodia. Sikkim, in referendum, votes for full statehood in India, for abolition of the institution of Chogyal (April 15). Dr. S. Radhakrishnan, former President, dies (Apr. 17).

India ushered into space age: satellite 'Aryabhatta' launched from a cosmodrome in Soviet Union (19). Sikkim joins Indian Union as the 22nd State (May 16). Farakka Barrage dedicated to nation (21). Mrs. Indira Gandhi's election set aside by Allahabad High Court (June 12). Justice V. R. Krishna Aiyar of the Supreme Court gives conditional stay of the Allahabad High Court judgement (24). Opposition leaders announce nationwide Satyagraha from June 29 to force Mrs. Gandhi out of office (26).

Emergency. President declares emergency. J.P. and a number of Opposition leaders and dissident Congressmen arrested (26). Prime Minister announces 20-point economic programme. New Ordinances promulgated (July 1). The RSS, Anand Marg, Jamat-i-Islami and 23 other organizations banned.

Parliament approves Conservation of Foreign Exchange and Prevention of Smuggling Activities Act (COFEPOSA). Parliament approves MISA bill. Lok Sabha adopts Election Laws (Amendment) Bill seeking to remove retrospectively certain 'uncertainties and doubts' regarding some provisions of the Representation of the People Act (Aug. 5). Constitution (39th Amendment) Bill 1975, placing election of President, Vice President, PM and Lok Sabha Speaker beyond the scrutiny of judiciary, approved by Parliament. Rajya Sabha adopts Constitution (41st Amendment) bill extending immunity from criminal and civil proceedings to the Prime Minister.

TV Extended. Calcutta and Madras on TV map of India. Ordinance promulgated for grant of national permits for goods trucks (Sept. 26). Government announces 12-point programme for making Prohibition policy a success (Oct. 1). K. Kamaraj dead (2). New MISA Ordinance prevents courts from enquiring into the grounds for detention of persons (17). 'Bonded' labour abolished by Ordinance (24). P.M.'s election upheld by the Supreme Court (Nov. 7). Naga problem settled (11). President's rule imposed in Uttar Pradesh (30). J.P. set free (Dec. 4). Government assumes special powers to prevent publication of objectionable matter in the press, repeals immunity for press reports of Parliament and abolishes Press Council from New Year day (Jan. 1, 1976). 75th Plenary Session of the Congress opens at Chandigarh. D. K. Barooah elected Congress President (29). 36th, 37th, 38th and 39th Amendments.

Shell Nationalized. 1976: Baliram Bhagat elected Lok Sabha Speaker (Jan. 6). President suspends seven freedoms guaranteed by Article 19(8). President's Rule ends in Uttar Pradesh. Burmah Shell nationalized, becomes Bharat Refineries Limited (24). Lok Sabha passes Prevention of Objectionable Matters Publications Bill. President's rule in Tamil Nadu. India's national news agency "Samachar" launched (Feb. 1). Lok Sabha's life extended by one year (4). Urban Ceilings Act comes into force (17). Gujarat comes under President's rule (March 13). India and Pakistan agree to exchange envoys, and resume overflights, restore air and rail links (May 14). Lok Sabha passes 40th Constitutional Amendment placing 64 Central and States laws above court review (25).

IA Boeing 737 to Bombay via Jaipur hijacked to Lahore, passengers released on September 11. 89 killed in IA plane crash at Bombay airport (Oct. 12). Lok Sabha passes the 42nd Constitution Amendment Bill making India a Socialist Secular Republic and laying down fundamental duties for citizens (Nov. 2). Lok Sabha votes to extend its own life by another year (5). President's rule in Orissa proclaimed (Dec. 16). England beats India in New Delhi Cricket Test (22). President's Rule lifted in Gujarat (24). 40th, 41st and 42nd Amendments.

1977: The President dissolves Lok Sabha (Jan. 18). Government relaxes rules of Emergency to permit normal political activity and electioneering. Four parties—Congress (O), Jan Sangh, Bharatiya Lok Dal and the Socialist Party—agree to work as one party under the name ***Janata Party***. An ordinance amending the Representation of People Act, 1951, promulgated increasing the period of disqualification of persons convicted for any offence from five years to six years. Two ordinances providing for the setting up of two authorities, one to decide disputes about election of the President and the Vice-President and the other about the Prime Minister and Speaker promulgated (Feb. 3).

Notification for Lok Sabha elections. President Fakhruddin Ali Ahmed passes away in New Delhi. B. D. Jatti sworn in Acting President (11). India's second earth station for satellite communication at Dehra Dun inaugurated (25). Polling in the Lok Sabha election starts (Mar. 16). Internal Emergency promulgated on June 25, 1975 withdrawn (21).

Janata in Power. Janata and its allies gain absolute majority in Lok Sabha. Indira Gandhi resigns (22). Ban on RSS and 26 other organizations lifted. A. K. Gopalan, Marxist leader, dies in Trivandrum. The RSS chief Deoras released.

Morarji Desai elected leader of Janata Party and sworn in Prime Minister (24). Sixth Lok Sabha session begins (25). Sanjiva Reddy elected Speaker of the Lok Sabha. Government revokes the external emergency promulgated on December 3, 1971. Governor's rule in Jammu and Kashmir (27). Go Assembly dissolved (27).

The Acting President B. D. Jatti dissolve the Legislative Assemblies of nine Congress ruled States, Bihar, Haryana, Himacha Pradesh, M. Pradesh, Orissa, Punjab, Rajasthan, Uttar Pradesh and West Bengal and places them under President's rule. Fou Parties—Congress (O) (Old Congress a distinguished from Indira Congress), Ja

Sangh, Bharatiya Lok Dal and Socialist Party—at their separate sessions decide to dissolve themselves and merge into a single party (30). Chandra Shekar chosen President of the Janata Party (May 5).

K. Brahmananda Reddy elected President of the Indian National Congress. The Election Commission recognises the Janata Party as a National Party. Poll notifications for ten States and two Union Territories issued.

Janata gains absolute majority in Haryana, Himachal Pradesh and Rajasthan Assemblies and in Delhi Metropolitan Council. Akali-Janata-CPM alliance wins absolute majority in Punjab. Janata gets absolute majority in Uttar Pradesh, Madhya Pradesh and Orissa. The All-India Anna DMK gets absolute majority in Tamil Nadu. No party gets absolute majority in Pondicherry. Janata gains absolute majority in Bihar. C.P.M. absolute majority in West Bengal. Government decides to discontinue national civilian awards (July 10).

Reddy President. Sanjiva Reddy elected (unopposed) President of India. K. S. Hegde unanimously elected Lok Sabha Speaker (21). The Planning Commission decides to introduce Rolling Plan concept (Sept. 10). Variable energy cyclotron commissioned in Calcutta (15).

Indira Gandhi arrested in New Delhi by the CBI on charges of corruption. Indira Gandhi released unconditionally. The External Affairs Minister A. B. Vajpayee addresses UN General Assembly in Hindi, the first ever. India and Bangladesh formally sign Farakka agreement in Dacca. Tripura comes under President's rule (Nov. 5). The silver jubilee time capsule in the Red Fort dug out (Dec. 8). 43rd Amendment.

1978: Air-India Boeing 747 with 213 persons aboard crashes into the sea off Bombay coast (Jan. 1). "M.V. Chandragupta", bulk carrier of the Shipping Corporation of India, with 69 persons aboard sinks in the Pacific Ocean (6). A Minorities Commission is constituted (15). Currency notes of the denominations of Rs. 1,000, Rs. 5,000 and Rs. 10,000 are demonetised (16)

The Indian National Congress(I) recognised as a national party and allotted the election symbol "hand". Malayalam poet Mahakavi G. Sankara Kurup dies in Trivandrum (Feb. 2). Justice Y. V. Chandrachud is sworn in as Chief Justice of India. Swaran Singh is elected Congress President (Mar. 1). The Shah Commission's interim report is submitted to the Government (27). The Government decides to abolish preventive detention (30).

Congress Opposition. The Congress (I) is recognized as the main Opposition and its leader, C. M. Stephen, as leader of the Opposition in the Lok Sabha (April 12). Samachar splits and its four constituents—PTI, UNI, Samachar Bharati and Hindustan Samachar—start functioning separately (14). Ashapurna Devi, Bengali Novelist wins 1976 Jnanapith Award (26). A second Press Commission is announced (14). Prime Minister Morarji Desai addresses the special session of the UN General Assembly (June 13). The Karakoram Highway, linking Gilgit in Pakistan-occupied Kashmir with Sinkiang in China, is opened (18).

Patna High Court sets aside the sessions court judgement sentencing the founder-head of the Ananda Marg, P. R. Sarkar, alias Anandamurti, and four others to imprisonment for life (July 4). Mother Teresa is presented with the Order of the British Empire. Justice H. R. A. Ansari is appointed chairman of the reconstituted Minorities Commission (26). The Rajya Sabha passes the MISA Repeal Bill (27). A statutory minimum bonus of 8.33 per cent for workers for the accounting year 1977, regardless of profit, is announced (22). The Shah Commission's final report. The Rajya Sabha returns the Constitution (45th Amendment) Bill to the Lok Sabha after striking down five clauses (31).

Test-tube Baby. A test-tube baby world's second, is claimed born in Calcutta (Oct. 3). India is unanimously elected Chairman of the UN Disarmament Commission The Report of the Jagan Mohan Reddy Commission, on the Nagarwala case, is submitted to the Government (23). An IAF plane crashes at Leh killing 77 defence personnel and a civilian (Nov. 19). The Privileges Committee of the Lok Sabha holds Indira Gandhi guilty of breach of privilege and contempt of the Lok Sabha for obstructin Government officials from collecting information for a question on Maruti in 1975 (21)

The Supreme Court declares the Parliament has the legislative competence to create special courts to try cases involving emergency offences (Dec. 1). The Lok Sabha expels Mrs. Indira Gandhi, former Prime Minister, from the House and sentences her to imprisonment for a term to last until its prorogation (19). Indira Gandhi is released from jail (26). 44th Amendment.

Rohini Up. 1979: Rohini-200, first monsoon experimental rocket, launched from Thumba (Jan. 6). Kanpur TV centre commissioned (12). Jnanpith award to S. H. Vatsyayan, Hindi poet and novelist (20). World Sanskrit Conference in Allahabad. The Election Commission declares the Chickmagalur seat in Lok Sabha vacant following the expulsion of Indira Gandhi (30). The Cellular Jail in Andaman and Nicobar declared a national memorial (Feb. 11). Sanjay Gandhi and the former Information and Broadcasting minister V. C. Shukla sentenced to two years in jail for the destruction of the film "Kissa Kursi Ka" (27).

Goa, Diu and Daman under President's rule (April 28). K. P. S. Menon gets Lenin prize (May (1). Cyclone hits coastal Andhra Pradesh—widespread damage to life and property (12). Gupta commission indicts Sanjay Gandhi and others on irregular Maruti deals (31). Soviets launch India's second satellite "Bhaskara" (June 3). The Congress(I) loses main opposition status in the Lok Sabha to the Congress(U). The Congress tables no-confidence motion against the Janata government (July 11).

Morarji Resigns. Morarji Desai resigns as Prime Minister (15). Jagjivan Ram elected Janata parliamentary party leader. Charan Singh is Prime Minister heading Janata(S)-Congress coalition and Jagjivan Ram is leader of the opposition in the Lok Sabha (17). M.V. Kairali, the only ship of the Kerala State Shipping Corporation, disappears in Gulf waters. The crew of 51 missing (20). Indian Airlines Avro crashes near Bombay, killing 45. Satellite launch vehicle fails to put 40-kilo payload into earth orbit, plummets into sea (Aug. 10). Damburst floods Morvi and Lilapur in Gujarat. Over 1000 dead (12). President's rule in Sikkim (18). Mrs. Gandhi withdraws support to the Charan Singh government (20). Presiden dissolves Parliament, orders year-en general elections and asks Charan Singh t head a caretaker government (21). M Hidayatullah, consensus choice of politica parties, as Vice-President of India (31) Nizam jewellery declared national treasure (Sept. 21). Operation (Milk) Flood-II launched (Oct. 2). Jaya Prakash Narayan dies (8) Supreme Court stays the execution of al death sentences. Mother Teresa awarde Nobel Peace Prize (17). Arunachal Assembl dissolved, President's rule (Nov. 3). Manipu under President's rule (14). Capt. Dhya Chand, Hockey wizard, dies (Dec. 3). Keral comes under President's rule (12).

VICTORY AND MARTYRDOM

The Eighties in modern Indian history will be remembered as an era of victory and martyrdom of Smt. Indira Gandhi. From the depths of ignominy and defeat she made a thunderous comeback through Parliamentary victory which has few parallels in world history. But, the problems that she had to face therafter were so enormous that she died a martyr in fighting them.

1980: Polling in Seventh General Election ends (Jan. 6). Devaraj Urs, Karnataka Chief Minister, resigns, following reverses in elections [illegible]. Caretaker Prime Minister Charan Singh informs the President of his desire to resign (9). Mrs. Indira Gandhi's Congress (I) wins two-thirds majority in the new Lok Sabha (10).

Gundu Rao sworn in Congress (I) Chief Minister of Karnataka (12). Mrs. Gandhi new Ministry at Centre sworn in; R. K Dorendra Singh Chief Minister of Manipu (14). D. Ramachandran becomes Chie Minister of Pondicherry and Pratap Sing Rane, Chief Minister of Goa (16). Assa agitation turns violent; Army called out; C India Manager stoned to death; Gangon Apsong sworn in as Chief Minister of Ar nachal Pradesh (18). Assembly elections in Kerala. Left Democratic Front wins absolute majority (21). Haryana's Janata CM Bhajan Lal with 37 MLAs defects to Congress (I), continues as Congress (I) Chief Minister; Balram Jakher elected Lok Sabha Speaker (22).

Nayanar Govt. formed in Kerala (24). Civilian Awards stopped by the Janata Government revived; Mother Teresa awarded Bharat Ratna (30).

Jantata Ministry headed by Shanta Kumar n Himachal Pradesh resigns; a Congress (I) ministry headed by Ramlal takes office (14). Total solar eclipse (15). State Assemblies in Tamil Nadu, Maharashtra, U.P, Bihar, Orissa, M.P, Rajasthan, Punjab and Gujarat dissolved. ministries dismissed and President's rule imposed (17). Forty-six defence personnel killed in plane crash in Agra.

C. M Stephen wins Lok Sabha by-election from Gulbarga Constituency (Feb. 23). Jagjivan Ram resigns as leader of Janata Parliamentary Party (27). C. M. Stephen made Cabinet Minister at Centre; three more Ministers of State added (Mar. 3). Jagjivan Ram "quits" Janata Party; Veerendra Patil made Cabinet Minister for Petroleum and Chemicals; Father Mathew Mannaparambil shot dead in Sasaram (7). C. B. Gupta (79), anata Party Treasurer and veteran freedom ighter, dies in Delhi (11). Thirty die as boat with over 200 passengers sinks off Cochin 19). Prakash Padukone becomes the first ndian to win All-England Badminton Championship (23).

anata Splits. Charan Singh, Chairman, expels Raj Narain from Lok Dal, Raj Narain orms a new-Janata (S) Party (Apr. 2). Janata Party splits again; members with RSS links orm Bharatiya Janata Party with A. B. Bapayee as President (6). Sanjay Gandhi and V. C. Shukla acquitted by Supreme Court in he *Kissa Kursi Ka* case (11). Six more private sector banks nationalized (15). Jamir worn in as Nagaland CM. (18). Baba Gurbachan Singh, Nirankari Chief, assassinated; on named new chief (24). Assamese poet irendra Kumar wins 1979 Jnanpith Award 26). Supreme Court bans handcuffing of risoners (30).

Sobha, the best actress Award winner, ies at Madras (May 1). Supreme Court rules arliament has no unlimited power to amend constitution; court also upholds validity of death sentence (9). Bahuguna quits Congress (I) and resigns from Lok Sabha (20).

AIADMK wins in Tamil Nadu Assembly election; Congress (I) wins in U.P, M.P, Gujarat, Rajasthan, Punjab, Maharashtra and Orissa (June 1). 15 more ministers added to Union Cabinet; Darbara Singh sworn in as Punjab CM and Dr. Jagannath Misra as Bihar CM (8). M. G. Ramachandran's second AIADMK Ministry takes office (9). President's rule in Assam extended for six months by Lok Sabha (10). Sanjay Gandhi appointed Congress General Secretary (13).

Sanjay Killed. Sanjay Gandhi dies in plane crash in New Delhi (June 23). Former President V. V. Giri passes away (24). Oil find off A.P'; Gas near Andamans (26). India recognises Heng Samrin Govt. in Kampuchea (July 7). Congress (I) gets absolute majority in Rajya Sabha (12). India orbits satellite: SLV-3 Rocket puts Rohini satellite in orbit (18). India regains Olympic hockey title (29).

Allahabad High Court dismisses election petition aganist Mrs. Gandhi (Aug. 12). Kudremukh Project in Karnataka completed (23).

Second Commonwealth Regional Heads of Government Conference in New Delhi (Sep. 4). T. Anjiah becomes Andhra Chief Minister (Oct. 11). Centre nationalizes Maruti company (14). Eleven more ministers added to Union Cabinet (19). Union Railway Minister Kamalapathi Tripathi resigns (25). President dimisses Tamil Nadu Governor Patwari; Sadiq Ali named successor (26). National Integration Council constituted (Nov. 6). Centre takes over Auroville (12). All members of Railway Board replaced (16). Manipur Chief Minister Dorendra Singh resigns (19). Prince Charles arrives in Delhi (24). Justice Apajee Varadarajan, a Harijan, appointed to Supreme Court (29).

Parliament condemns blinding of undertrials in Bhagalpur; Supreme Court orders enquiry into Bhagalpur blinding; former Railway Minister K. Hanumanthiah dies (Dec. 1) President's rule (imposed on Dec. 12, 1979) in Assam revoked; Mrs. Anwara Taimur heads a new Ministry in Assam (6). Soviet President Leonid Brezhnev arrives in New Delhi (8) 1980 ***Jawaharlal Nehru Award*** for international understanding for Mrs. Barbara Ward

(23). 1981: World Tamil Conference opens in Madurai (Jan. 4). Mr. B. K. Nehru appointed Governor of Jammu & Kashmir (15). Central Government offers full statehood to Mizoram (17).

Award for 'Akrosh'. India's 'Akrosh' and Bulgaria's 'Unknown Soldier's Patent Leather Shoes' share the Golden Peacock award for the best film at the 8th International Film Festival (Jan. 17). Mr. M. M. Ismail, Chief Justice of Madras High Court, transferred to Kerala and Mr. K. B. N. Singh, Patna High Court Chief Justice, to Madras High Court (19). The Jammu & Kashmir Chief Minister Sheikh Abdullah names son Dr. Farooq Abdullah his successor (23). Third airline feeder service Vayudoot inaugurated (26). Dr. Madhuri Shah appointed Chairman of the University Grants Commission (Feb. 3). Sixty-one die in circus fire in Banglore (7). Forty-four ministers take office in Andhra Pradesh.

Census operations begin (9). Tamil Nadu and Kerala Governments decide on judicial inquiry into Spirit Scandal (Feb. 11). Fire wrecks Spencer's buildings in Anna Salai in Madras (13). Medicos suspend stir in Gujarat (18). Railway fares and freight to cost 10 to 15 per cent more. M. H. Beg, former Chief Justice of India, named Chairman of the Minorities Commission in succession to Mr. M. A. Ansari (27). Mrs. Gandhi asks the Civil Supplies Minister V. C. Shukla to resign (Mar. 19). Minting of three, two and one paise coins discontinued (20). Tamil Nadu Government relaxes Prohibition (21). Mr. R. K. Vyas, Pondicherry Governor, succeeds Mr. L. P. Singh as Assam Governor (25). The CPI central executive decides to expel its former Chairman, S. A. Dange, for his anti-party activities (29).

Bengali film "Aakaler Sandhane" wins 1980 Swarna Kamal award for best film; Dada Saheb Phalke award for best film goes to P. Jairaj (Apr. 7).

Dange Expelled. S. A. Dange, expelled from the Communist Party of India. The 105-day-old anti-reservation agitation by Gujarat students and junior doctors withdrawn unconditionally (13). 14-day strike by LIC employees called off following Supreme Court orders to the management to make bonus payments within seven days (15). The Finance Minister R. Venkataraman annoucnes new concessions to export-oriented units (22).

Ministry led by Capt. W. A. Sangma, Congress(I), sworn in Meghalaya (May 8). Y. B. Chavan resigns from Congress(U) (26). More than 15 million hit by drought in Rajasthan (29). SLV-3 puts Rohini in orbit from Sriharikota (31).

General K. V. Krishna Rao assumes charge as the Chief of Army Staff (June 1). Malayalam fiction and travelogue writer S. K. Pottekkat wins the Jnanpith Literary award for 1980, for his autobiographical novel 'Oru Desathinte Katha' (7). Rajiv Gandhi and Begum Abida Ahmed win by-elections from UP constituencies (15). APPLE, India's first geostationary experimental telecommunications satellite is launched into orbit from Kourou, French Guiana. The June 14 polling in the Garhwal Parliamentary constituency in UP is declared void and fresh poll ordered (19). Air Marshal Dilbagh Singh is appointed Chief of Air Staff (24). Assam Chief Minister Mrs. Anwara Taimur resigns (28). President's rule imposed in Assam (30).

Liquor Tragedy. Over 350 die in liquor tragedy in Bangalore and Mysore (July 7). Govt. increases prices of petrol, diesel, kerosene, cooking gas and furnace oil (July 10). Shiv Charan Mathur sworn-in in place of Jagannath Pahadia as Rajasthan Chief Minister (13). Toddy and arrack shops reopened in Madras. India's first three-axis stabilised experimental communication (APPLE) put in its slot (16). Worst deluge in centuries in Rajasthan—Jaipur cut off (19). TV Programme successfully relayed through APPLE (22). Prakash Mehrotra appointed Governor of Assam and Meghalaya and S. M. H. Burney Governor of Manipur, Tripura and Nagaland (23). Ordinance empowers Central Govt. to ban strikes in any essential service (27).

Jagjivan Ram heads breakaway Congres s(U) and calls new party Congress(J) (Aug 5). Fifty persons given life terms for killing 1 Harijans of Pipra village in Patna district (5). The Governor of Rajasthan, Mr. Raghuku Tilak dismissed (8). Prime Minister Indira Gandhi leaves for African tour. Mr. Sharad Pawar, Maharashtra leader, elected Presi dent of Congress(U) (25). Air Chief Marsha Dilbagh Singh succeeds Air Chief Marsha

Latif as Air Chief (30). Lok Sabha Speaker holds no privilege had been breached by the Finance Minister R. Venkataraman's statement on fund collections by the Maharashtra Chief Minister A. R. Antulay (Sept. 7).

Pilgrimage to Tibet. The first batch of 18 members of a pilgrim party leaves for Kailas and Manasarovar in Tibet—the first batch to go there in 20 years. Lala Jagat Narain, veteran journalist and freedom fighter, shot dead in Ludhiana (Sept. 9). B. D. Pande appointed Governor of West Bengal to succeed T. N. Singh who resigned (10). Tamil University inaugurated in Thanjavur (15). Sant Jarnail Singh Bhindranwale arrested in connection with Lala Jagat Narain's murder; violence follows; eight die in police firing (20).

Oil struck in off-shore well in the Cauvery basin 50 km off Vedaranyam coast. Mrs. Indira Gandhi in Fiji (Sept. 25). Five Khalistan activists hijack Indian Airlines Boeing 737 to Pakistan with 117 passengers; 66 freed on arrival in Lahore (29). Pakistan Commandos dressed as cleaners overpower five hijackers of the Indian Airlines Boeing freeing 45 hostages on board in a 28-minute operation. Delhi asks Pakistan to extradite hijackers (30).

Activists of the Dal Khalsa who masterminded the hijacking of Indian Airlines arrested (Oct. 1). Sant Jarnail Singh Bhindranwale released from judicial custody (15). Congress(S) pulls out of ruling Marxist-led Left Democratic Front in Kerala. Bombay High Court freezes funds of the Indira Pratibha Prathisthan and the Konkan Unnati Mitra Mandal (16).

Nayanar Resigns. Twenty-one-month-old Left United Front Ministry led by Mr. E. K. Nayanar, resigns in Kerala (Oct. 20). Kerala under Central rule (21).

PM back in Delhi after attending the Cancun summit (28). Experimental TV station inaugurated in Bangalore (Nov. 1). Supreme Court stays all executions in the country pending disposal of petition challenging the validity of death penalty. Sofia University Bulgaria) honours Mrs. Gandhi (7). Mrs. Gandhi in Italy: delivers McDougall lecture at FAO; meets Pope (9).

IMF board clears 5 billion SDR loan for India (Nov. 10). Mrs. Gandhi in Paris. France offers easy credit to buy Mirage Fighters. 1981 Nehru Award for Prof. and Mrs. Gunnar Myrdal (12). Vice Admiral Dawson named new Chief of Naval Staff (18). Bhaskara is launched from Soviet Cosmodrome (20). Sri Krishna Deva Raya University inaugurated in Anantapur (22). Air India plane hijacked from Seychelles; crew, passengers freed in Durban, S. Africa, where plane lands. Hijacking done by mercenary force sent to topple the government in Seychelles.

Qutub Minar Tradegy. Forty-five people, majority of them children, killed in a stampede in Qutub Minar, Delhi (Dec. 5). Ry. freight rates raised by 10 to 15 per cent. India-China talks open in Beijing (10). Jathedar Santokh Singh, President of Delhi Gurdwara Prabhandak Committee, shot dead; assassin also shot dead by bodyguard (21). Congress(S) unit in Kerala defies national leadership and decides to join Ministry headed by Congress(I) (23). New Madras-Penang undersea cable commissioned.

Parliament votes to restore the original character of the Aligarh Muslim University (Dec. 24). President's rule revoked and a new Government led by the Congress(I) leader Karunakaran, installed in Kerala. Supreme Court upholds law for detention without trial but lays down guidelines (28). Congress(I) loses nine of 29 seats in elections to the Andhra Pradesh Legislative Council, and the by-election to the Lok Sabha from Sagar in Madhya Pradesh; wins the Kosta (MP) Assembly seat (29). Supreme Court holds transfer of judges valid.

1982: Firing on Assam agitators—four killed. Film actor David Abraham dies in Toronto (Jan. 1). Mrs. Anwara Taimur, former Assam Chief Minister, resigns as Congress Legislature Party leader (9)

Indians in Antarctica. 21-member Indian team lands on Antarctica. Industrialist B. M. Birla passes away (Jan. 1). Bombay High Court finds allegations against the Chief Minister A. R. Antulay justified. Antulay resigns. Jyotirmoy Bosu (CPI(M) M.P. dies in Jaipur (12). K. C. Gogoi sworn in as Assam Chief Minister (13). Prime Minister reshuffles cabinet. Pranab Mukherjee gets Finance portfolio; Defence for R. Venkatraman (15). 30 feared drowned as country boat capsizes in Sasthamcottah Lake near Quilon (16).

Bombay textile workers go on strike (Jan. 18). Babasaheb Bhosale chosen Maharashtra Chief Minister. Mizo National Front and allied organizations declared illegal by Government (19). 14-member Assam Ministry sworn in (22). Telephones celebrate centenary (24). Mohan Lal Sukhadia, former Chief Minister of Rajasthan, dies (26). Sixty-three killed when the Hyderabad-Delhi Dakshin Express and a goods train collide head-on near Delhi (27). Seven-member delegation led by Agha Shahi arrives in Delhi for Indo-Pakistan talks on a no-war pact. Bihar Govt. suspends 40 police and medical officers in the Bhagalpur blinding case (29). Billa and Ranga hanged for the murder of the Chopra children (31).

Kerala Speaker A. P. Kurian of the CPI(M) and the Deputy Speaker, M. J. Zakaria Sait (AIML) resign and join Opposition. A. C. Jose takes over as Speaker (Feb. 1). Statue of Bahubali consecrated at Dharmastala (3). Kerala UDF Ministry headed by K. Karunakaran survives no-confidence motion (4). Anjiah announces decision to quit as AP Chief Minister (16). Lok Dal & Democratic Socialist Party boycott President's address to the joint session of Parliament. Sivaji Ganesan, Tamil film actor, nominated to Rajya Sabha (19). B. Venkataram to succeed Anjiah as Andhra Pradesh Chief Minister (22).

Massive Taxes. Central Budget: Massive tax effort to raise Rs. 590 crore. Air Chief Marshal H. Latif appointed Maharashtra Governor. Admiral Dawson takes over as Chief of Naval Staff (March 1). Press Council reconstituted. Kerala Congress Mani group member withdraws support: Crisis in Government (15). President's rule in Kerala (17). President's rule in Assam also: Assembly dissolved. Acharya J. B. Kripalani (94) dead (19).

N. T. Rama Rao, film artist, forms new party Telugu Desam in Andhra Pradesh (21). Prof. K. M. Chandy appointed Pondicherry Lt. Governor (22). Rajya Sabha biennial election; Congress(I) wins all the seats in Karnataka, Left front wins in Bengal (27). The first Indian-assembled Jaguar aircraft by HAL, Bangalore, test-flown (31). Reccord output of oil from Bombay High (Apr. 9).

INSAT in Orbit. India's satellite INSAT-1A placed in orbit; Snag detected (Apr. 10). Jnanpith award for Amrit Preetham, Punjabi writer (11). Dr. Chenn Reddy appointed Punjab Governor (12 Narayanaswami Naidu, President of Tam Nadu Agriculturists Association, arrested fo defying ban order in Madras (17).

Haryana and Himachal Pradesh Assemb lies dissolved (19). INSAT-1A moves to park ing slot (21). President inaugurates centenar celebrations of the erstwhile Mysore Repre sentative Assembly (23). Karnataka PCC(led by Devaraj Urs severs link with paren body, the AICC(S), and forms a regiona party (28). Mrs. Accamma Varkey (73), free dom fighter and Cong. MLA in forme Travancore-Cochin Assembly, dies (May 5 Karnataka Kranti Ranga led by Devaraj U comes into being (10). Banking departmen in Ministry of Finance revived (13). Election for Assemblies held in West Benga Haryana, Himachal Pradesh and Kerala.

Basu Bengal C.M. Jyoti Basu is We Bengal CM, Karunakaran in Kerala, Bhaja Lal in Haryana and Ram Lal in H.P. (May 19 Congress(I) Front wins in Kerala (20). Beng Left Front gets absolute majority (21). H. Bahuguna re-elected to Lok Sabha fro Garhwal constituency (22). Bhajan Lal swor in Haryana Chief Minister (23). Cabin approves Defence Minister's recommend tion to set up the proposed Naval Academ at Ezhimala, Kerala (29).

First Secretary of Kuwaiti Embassy India, Mustafa-al-Marzook, shot dead by 30-year-old foreigner in South Delhi (June Delhi police seek interpol aid to probe t killing of Mustafa-al-Marzook. Oil producti in Bombay High offshore oilfields registe record level of 251,000 barrels (5). D. Deva Urs, former Karnataka Chief Minister, di (6). Division Bench of the Bombay High Cou dismisses appeal filed by former Maharas tra Chief Minister A. R. Antulay against t finding holding Antulay guilty of arbitra allotment of cement (10).

Congress(I) high command directs Ant lay former Chief Minister of Maharashtra resign as chairman of the Indira Gand Pratibha Prathisthan (14). R. K. Trivedi, Ce tral Vigilance Commissioner, new Ch Election Commissioner (16). 19 persons led and 25 injured in an Air India Boeing 7 from Singapore via Madras crash at Bomb

Justice H. R. Khanna, former judge of the Supreme Court, Opposition nominee for presidency (22). Unanimous vote in Karnataka legislature, Kannada to be sole first language (24).

Oil in Godavari. Good deposit of oil struck at Enuguvani Lanka in Razole structure of Godavari onshore (June 27). U.P. Chief Minister, V. P. Singh resigns reacting sharply to massacre of 16 villagers, by dacoit gang. MGR inaugurates Tamil Nadu's nutritious noon meal programme benefitting an estimated 63 lakh poor children (July 1). S. Bangarapa (Cong. I) MLA and former PCC(I) President, quits ruling party (6). Israeli consul in Bombay, Yosef Haseen, expelled from India.

Katherine Mary Hellman (82), a close associate of Mahatma Gandhi and popularly known as Sarla Behn, dies (July 8). Cong. (I) candidate Zail Singh declared elected President (15). New UP ministry headed by Sripat Mishra sworn in. 10 Indians fly home to freedom after eight years in Pakistani jails. Mira Behn (90), disciple of Mahatma Gandhi, dies (20). Zail Singh sworn in President (25). Petroleum Miniser P. Shiva Shanker tells Parliament that the controversial Kuo Oil deal file was 'mislaid' by the Special Assistant to the Prime Minister (28). Manibhai Bhimbai Desai wins Magsaysay Award for Public Service for 1982 (31). Indian Air Force sets up panel of eight to ten ace pilots to participate in an Indo-Soviet Space flight (August 1).

Fire in Bombay High. Fire breaks out in the Bombay High offshore oil well where a blow-out occurred a few days earlier (Aug. 2). Indian Airlines Boeing 737, from New Delhi on its scheduled flight to Srinagar hijacked; drama ends four hours later with the hijacker Gurbax Singh, suspected to be a Khalistan supporter, being overpowered, all passengers safe.

Chand Prasad Bhatt, Indian environmentalist, gets Magsaysay Award for Community Leadership (Aug. 4). Bombay High oil well fire off. S. K. Pottekkat, (69), writer, Jnanpith Award winner and former M.P. dies (6).

Manmohan Singh, Member Secretary, Planning Commission, appointed Governor of Reserve Bank (Aug. 10). Arun Shourie, named for the 1982 Magsaysay Award for journalism, literature and creative communication arts (12). Investment of Rs. 269 crore with a foreign exchange component of Rs. 89 crore, approved for the Maruti project in collaboration with Suzuki Motor Company of Japan (17). The Jammu and Kashmir Governor B. K. Nehru accepts resignation of G. M. Shah, the State's Works and Power Minister and son-in-law of the Chief Minister Sheikh Abdullah (18).

Vypeen Tragedy. Sixty die after consuming adulterated liquor at Vypeen island in Cochin (Sept. 4). INSAT-1A turned off as it is "beyond redemption" (5). Jammu and Kashmir Chief Minister Sheikh Abdullah (77) dies (7). Oil struck in Porto Novo, 40 km from Pondicherry (8). Earth stations at Delhi, Madras, Port Blair, Aizawl and Leh put into operation through Intelsat (10). Malayalam film, 'Oridathoru Phayalwan' bags best film award in Asian film festival (15). The Karnataka Vigilance Commission detects 11 cases of students securing admissions to engineering colleges in the merit pool by altering marks cards and other malpractices (18).

President refers J & K Resettlement Bill to Supreme Court (Oct. 5). India and Bangladesh decide on a two-year extension of the Farakka agreement of 1977. India leases Tin Bigha to Bangladesh, the sovereignty resting with India (7). The Air Force celebrates 50 years (8). H. V. Kamath, freedom fighter and parliamentarian, dies (9). Union Government announces cut in customs duty on imported colour TV sets (11).

JRD's Flying Feat J. R. D. Tata, father of Indian civil aviation, pilots the De Havilland Leopard Moth from Karachi to Bombay—a feat he performed 50 years ago (Oct. 15). Journalists and non-journalists from all over the country stage a march to Parliament demanding withdrawal of the Bihar 'anti-press' Bill (21). Gandhiji's private secretary Pyare Lal dies (27).

Gen. Zia-ul-Haq of Pakistan in New Delhi. Agreement to set up a joint commission. Ravi L. Kirloskar, (65) industrialist, dies (Nov. 4). C. Narayana Pillai (80), freedom fighter, writer, journalist and former MP dies in Trivandrum (14). Acharya Vinobha Bhave (88) dies (15). Diplomat K. P. S. Menon (84) dies (21).

Bihar Government decides to amend the controversial Press Bill (Dec. 7). Union Government decides to cancel visit of three-member delegation to China to take part in Kotnis memorial function, following insinuations that India has misused Asiad forum (11).

Congress led by A. K. Antony merges with Congress-I in Mrs. Gandhi's presence (13). Manoranjan Guha, journalist and freedom fighter, dies (16).

India-Pak Commission. India and Pakistan agree to set up ministerial level joint commission (23). Cold wave in Bihar, over 50 persons die (28). Police and Nabi-Day processionists clash at Alleppey in Kerala. One killed in police firing (20). The 114-year-old English daily, the Madras Mail, ceases publication.

1983: Prof. Satish Dhawan, Chairman, Space Commission and Secretary Department of Space awarded the Aryabhata medal for 1983 (Jan. 2). Telugu Desam sweeps to power in Andhra Pradesh; Janata-led front, ahead in Karnataka; CPI (M)-led four-party left front secures absolute majority in Tripura (Jan. 6).

Janata Party President Mr. Chandra Shekhar starts on his *Bharat Yatra* on foot from the Gandhi Mandapam in Kanyakumari (Jan. 6). Mr. N. T. Rama Rao takes oath as Chief Minister of Andhra Pradesh (8). Eight-member Janata Party Ministry, headed by Mr. Ramakrishna Hegde, takes office in Karnataka. Year-long celebrations of Subramania Bharati birth centenary comes to formal conclusion (10). Notification issued to set in motion the process of electing a 126-member Assam Assembly and 12 members to the Lok Sabha from the State (12).

Bhave Bharat Ratna. After a break of two years Bharat Ratna awarded to late Sarvodaya leader Acharya Vinoba Bhave (Jan. 25). P.M. reconstitutes cabinet by appointing two new Cabinet Ministers and five Ministers of State. Piloo Mody (57), politician, dies in Delhi (29). Minister for Shipping and Transport, Mr. C. M. Stephen, resigns to become Cong. (I) secretary. Governor of A.P. promulgates ordinance banning collection of capitation fee (30).

Vasantrao Patil to succeed Babasaheb Bhosale as Maharashtra's Chief Minister. Mr. Vasantrao Patil sworn in Chief Minister of Maharashtra (Feb. 2). A.P. Government staff retirement age reduced to 55. The Chairman of the Railway Board M. S. Gujral's services terminated.

P.M. drops Communications Minister Mr. A. P. Sharma and Civil Supplies Minister Mr. B. N. Singh from the Cabinet. Govt. announces hike in kerosene, HSD prices (Feb. 14). Governor of Himachal Pradesh, Mr. A. N. Banerji, appointed Karnataka Governor. Oil struck off Andhra Pradesh coast. C. K. Daphtary, former Solicitor-General and Attorney-General, dies (16). P. C. Ghosh, former Chief Minister of West Bengal, dies (18). Army alert in Assam as 250 die in Nowgong district town (19).

Cong. (I) wins two-thirds majority in Assam. Meghalaya Cong. (I) stakes claim for power (Feb. 23). Hiteswar Saikia heads new Assam Cong. Ministry, Playwright Tennessee Williams (71) dies (25). Govt. accepts Akalis' religious demands. 13-member Cong. (I) Ministry assumes office in Assam. New levies in Central budget to net Rs. 716 crore. (28).

Army inducted in all seven districts of Assam under provisions of Disturbed Areas Act. President Mr. Zail Singh rejects Akali Dal's demand for resignation (March 2).

Four southern Chief Ministers, all non-Congress (I) parties, form forum for tackling common problems and for seeking drastic changes in Centre-State relations (Mar. 20). Second Indian Antarctica expedition returns. Dharamsey Mulraj Khatau (82), doyen among industrialists, dies (21). Mrs. Indira Gandhi announces appointment of one-man commission, headed by retired Supreme Court Judge Mr. Justice R. S. Sarkaria, to go into Centre-State relations (24). West Bengal unit of Congress (S) headed by Mr. Priya Ranjan Das Munshi merges with Congress (I).

New Oil Found. ONGC strikes oil off Bombay coast (April 1). Cong (I)-led Meghalaya Democratic Front assumes office in Meghalaya. Chief Ministers conference in New Delhi endorses 20-point plan. T. Nadu drought: Krishna water to be brought by rail (4). Gen. J. N. Chaudhari (75), former Chief of Army Staff, dies (6). Virbhadra Singh elected Himachal Pradesh Chief Minister (8).

"Gandhi" (film) wins 8 Oscars (Apr. 12). Akali Dal launches "army of 100,000 volunteers" as "sacrifice force" (14). SLV-3 launched. Rohini put in orbit (17). Agreement for a Rs. 700-crore scheme to bring Krishna water to Madras signed (19). 40 feared dead in bus disaster in Idukki district in Kerala (21). First bone-marrow transplant in India at the Tata Memorial Hospital in Bombay (23).

Mathura Oil Refinery inaugurated (May 4). Karnataka Chief Minister Mr. Ramakrishna Hegde wins Assembly seat from Kanakapura (16). Cong. (I) retains MP Assembly seats in by-election; Big margin for Cong. (I) in Porbandar; For the first time, AIR, Madras organises a tele-conference with people travelling by land, sea and air enabling them to talk among themselves (17). Prime Minister Mrs. Indira Gandhi inaugurates work on the Krishna water supply (Telugu Ganga) project for Madras (25).

Gen. A. S. Vaidya, GOC-in-C Eastern Command, appointed new Chief of Army Staff (May 31). Morarji Desai denies having been a CIA agent (June 2). Nearly 65 per cent of over 31-lakh people vote in seventh general elections for the 76 Assembly seats in Jammu and Kashmir (5). Ruling National Conference wins in Kashmir (6). G. D. Birla (89), doyen of Indian industry, dies in London (11).

Farooq CM. Dr. Farooq Abdullah sworn in Chief Minister of Jammu and Kashmir (June 12). Congress (I) withdraws support to DMK in Pondicherry coalition (22). Pondicherry under President's rule; Assembly dissolved. On the penultimate day of 4000 km Bharat Yatra, Janata President Chandrasekhar enters Union Territory of Delhi (24).

First 235 MW unit of nuclear power station at Kalpakkam goes critical (July 2). Maharashtra Chief Minister, Vasantdada Patil elected to State Assembly from Sangli Constituency (4). Union Cabinet approves special plan for expansion of television network envisaging installation of 112 low power and 13 high power additional transmitters by end of 1984 (6). Karnataka Ordinance for abolition of capitation fee in medical and engineering colleges in the State promulgated (11). Former Chief Minister of Himachal Pradesh Ram Lal appointed Governor of Andhra Pradesh (13). Mahadevi Verma, 76-year-old Hindi poetess, selected for Bharatiya Jnanpith award for 1982 (24).

One-day bandh in Tamil Nadu, called by the State Government and backed by Central Government in cooperation with all political parties and trade unions to protest against killings of Tamils in Sri Lanka, goes off peacefully (Aug. 2). 19-day-old strike of Government employees in Andhra Pradesh called off (3). Dr. Raja Ramanna, Director of Bhabha Atomic Research Centre, appointed Chairman of Atomic Energy Commission and Secretary of Department of Atomic Energy in succession of Dr. H. N. Sethna (6). Lok Dal and Bharatiya Janata Party form national democratic alliance" (8).

Karunanidhi Resigns. DMK President, Mr. M. Karunanidhi and General Secretary Mr. K. Anbazhagan resign from Tamil Nadu Assembly on Sri Lanka Tamils issue; Bihar Chief Minister, Dr. Jagannath replaced by Union Minister of State for Energy Mr. Chandrasekhar Singh (10). TULF leader Mr. A. Amrithalingam in Delhi meets Prime Minister (14).

Customs and excise duty reductions, amounting to about Rs. 98 crore on electronic items in a full year, announced (June 19). Mr. Justice V. M. Khalid of Kerala High Court to be Chief Justice of Jammu and Kashmir High Court (22). Four ministers of Karunakaran Cabinet tender resignation (26). Indian scientists successfully deploy vital C-band antenna and partially open solar array of the Indian satellite INSAT-1B; (31).

Kona Prabhakara Rao, sworn in Lieutenant-Governor, Pondicherry (Sept. 2). INSAT-1B runs into snag, as solar array fails to deploy fully (4). India conferred consultative membership of Antarctica Treaty; Over 100 killed, 98 injured, as multi-storeyed building under construction collapses in Majestic area, Bangalore (12).

INSAT set Right. INSAT-1B overcomes hurdles, successfully completes all deployment manoeuvres, including solar sail (Sept. 14). INSAT-1B successfully pushed into its (nominal) position in its space home (18). APPLE, India's first experimental communication satellite, ends mission after remaining in space for two years and three months (20).

Supreme Court upholds execution of criminals through hanging by rope (Sept. 23)

Mohammad Koya, (56), Dy. Chief Minister, Kerala, dies in Hyderabad (28). Indo-Bangla talks begin, satisfaction expressed over implementation of the existing protocol on inland water transport and trade between the two countries (29). The summit of some 22 countries from the West, East and the non-aligned group ends (30).

G. M. Shah, brother-in-law of the Jammu and Kashmir Chief Minister Dr. Farooq Abdullah and seven senior colleagues expelled from the ruling National Conference (Oct. 4). Cyclone hits Andhra Coast; kills 17; Opposition leaders begin conclave in Srinagar (5). Punjab under President's rule; Squadron leader Rakesh Sharma, an IAF test pilot, selected to go into space (6). The Governor of West Bengal, B. D. Pande, appointed Governor of Punjab.

The first ever trans-Himalayan motor expedition concludes (Oct. 8). Ravi Varma Thampuran (92), senior-most member of the Cochin royal family dies in Ernakulam (12). China makes fresh territorial claims in the north-eastern sector of Bhutan (14). The Union Government takes over management of 13 textile undertakings in Bombay; marathon strike in cotton textile industry ends (19).

The Union Government decides to reduce the upper age limit for the Civil Service examinations from 28 to 26 (Oct. 22). Avukaderkutti Naha sworn in Deputy Chief Minister of Kerala (24). Four condemned young men in the Joshi-Abyankar multiple murder hanged to death at the Yeravada Central prison (25).

No to Silent Valley. On the basis of the Menon Committee report the Prime Minister decides not to give clearance for the Silent Valley hydro-electric project (Oct. 27). The Akali Dal President Harchand Singh Longowal rejects Mrs. Indira Gandhi's plea for talks on the basis suggested by her. The fourth round of the Sino-Indian talks concludes (30).

Lakshmi Devadas Gandhi (71), youngest daughter of Rajaji and daughter-in-law of Gandhiji, dies (Nov. 9). In Bombay INS Godavari, first frigate fully designed by Indian Navy and built at Mazgaon, commissioned (Dec. 10). No-trust motion against Cong. (I)-led coalition Ministry rejected in Kerala Assembly (20). Third Indian expedition lands on Antarctica (27).

1984 Akali Dal (L) President, Harchan Singh Longowal, rejects Home Minister P. C Sethi's offer to refer Chandigarh and Abohar Fazilka issues to the Supreme Court. Coconu oil prices reach all time high of Rs. 38 per K in Kerala (Jan. 2). 71st Session of India Science Congress in tribal town of Mesra i Ranchi, Bihar. Filmotsav 84 opens in Ne Delhi (3).

Posts of Village Officers abolished i Andhra Pradesh (Jan. 5). Andhra abolishe land revenue tax. Attempt on life on C Rama Rao (9). C. M. Stephen, Congress(I General Secretary, dies (16). One-year-ol Janata Government in Karnataka, headed by Mr. Ramakrishna Hegde, wins confidence vote (17).

"Kashmir Liberation Army" kidnaps India Assistant High Commissioner in Birmingham Mr. R. H. Mahtre, who is later killed (Feb. 4) Mohammed Maqbool Butt, (50), of Kashmi Liberation front executed in Tihar Jail, Delh (11). Prime Minister Indira Gandhi, leaves fo Moscow to attend the funeral of Soviet leade Yuri Andropov (13). Prime Minister Indir Gandhi dedicates INSAT I system to the nation (26). Akali leaders burn copies o Article 25 of the Constitution at a Gurudwar in Delhi (27).

Teresa University. Mother Teres University inaugurated by Mother herself a Kodaikanal, T. Nadu (Mar. 2). Punjab Gov deploys para-military forces and police wit wide powers (4).

Chandra Sekhar elected President of Janata Party for third term (Mar. 6). Controversia Bihar Press Bill withdrawn (7). Aviation fue tank blows up at the Cochin Refinerie leading to devastating fire (8). Agreemen signed between India and Burma for delimiting the maritime boundary (14). Tamil Nad Government decides to introduce an entrance test for admission to engineering an medical colleges (15). Three lakh port an dock workers strike paralysing 10 majo ports (16). Private sector allowed to manufacture telecommunication, switching and transmission equipment (23).

57-km-long pipeline to carry milk installe by Kaira district milk producers union between Navagam and Anand in Gujarat (24

Lt. Governor of Delhi, Jagmohan, appointed Governor of Jammu and Kashmir in place of B. K. Nehru, shifted to Gujarat (26).

Andhra Legislative Council and Supreme Court on collision course with the former ignoring a court directive and asking the Hyderabad police chief to arrest and produce the Chief Editor of *Eenadu* (Mar. 27). DMK President M. Karunanidhi, among seven candidates elected to Tamil Nadu Legislative Council in biennial elections; A.P. Council prorogued; motion against *Eenadu* Editor lapses (30).

Jammu and Kashmir Assembly adjourned sine die following walkout by Congress(I) members (Apr. 2). Squadron leader Rakesh Sharma became India's first spaceman, when he was launched aboard Soyuz T-11 spaceship from Baikonur cosmodrome in Kazakhstan along with two Soviet cosmonauts (5).

Punjab MP Killed. Terrorists in Chandigarh kill Congress(I) MP from Punjab Mr. V. N. Tiwari; National Security Act made more stringent through an Ordinance, in its application to Punjab and Chandigarh (Apr. 5). First hang glider expedition with four army offiers and a jawan from Kashmir to Kanyakumari flagged off (7).

Lalith Athulathmudali, Sri Lankan National Security Minister, in New Delhi for talks (Apr. 12). Kerala Government decides to drop Silent Valley Project and declare the entire area a national park (13). Rama Rao Adik, Deputy Chief Minister of Maharashtra quits office (18). Tirumalai-Tirupati Devasthanams celebrate Golden Jubilee; Chief Minister Mr. N. T. Rama Rao announces plan to develop Tirupati on the lines of Vatican (22).

IAF Officer, Squadron Leader Paramjit Singh Ahluwalia, hacked to death in Ferozepore (Apr. 23). Tamil Nadu Assembly passes Bill to repeal the Anti-Scurrilous Writing Act. Congress(I) voted to power in Mizoram (29).

Tamil Nadu Government extends noon-meal scheme to 63,000 pensioners (May 1). Prime Minister Indira Gandhi and Nakasone, Prime Minister of Japan, hold talks in New Delhi (4).

Phu Dorjee's Feat. Phu Dorjee conquers Mount Everest without oxygen—a rare feat (9). Giani Pratap Singh, aged former head priest of the Akal Takht, shot dead by intruders in his house in Amritsar (10). Government withdraws cases registered against Akali Dal members for defacing the Constitution; Arrested leaders freed.

Sikkim Government headed by Narbahadur Bandari dismissed; Mr. B. B. Gurung, State's Finance Minister, sworn in Chief Minister; Bronze bust of mathematician Srinivasa Ramanujan unveiled at the Madras University (Mar. 11). Ramesh Chandra Chopra, editor-in-chief of the *Hind Samachar* group of newspapers shot dead by extremists in Punjab. Mr. George Bush, the U.S. Vice-President, in Delhi; Mr. M. A. Muthiah Chettiar, (79), Pro-Chancellor, Annamalai University, dies (12).

Congress(I) attains absolute majority in Meghalaya (Mar. 22). Miss Bachendri Pal becomes first Indian woman to conquer Everest (23). Centre takes over administration in Sikkim; State Assembly dissolved (25). Dr. Bruno Kreisky, former Chancellor of Austria and Dr. Leopold Sedar Senghor, former president of Senegal given the Jawaharlal Nehru Award for International Understanding for 1983 and 1982 respectively (28).

Operation Blue Star. Army takes control in Punjab to stem terrorist violence. The State declared a restricted area under the Foreigners Act (June 2). Curfew throughout Punjab; Movement of vehicular traffic prohibited; Ban on media coverage (3). *Operation Blue Star:* Army closes in on the Golden Temple where an estimated 300 extremists were entrenched. Heavy exchange of fire with extremists using mortar and MMGs (5). Army forces flush out terrorists in Golden Temple and other religious places; Over 325 killed on both sides and several hundreds injured; Terrorists breach an embankment of the Bhakra canal about 2 km from Ropar (6).

The bodies of Jarnail Singh Bhindranwale and Bhai Amrik Singh, President of the banned Sikh Students Federation, found in the basement of the Akal Takht in the Golden Temple; Violence in Delhi, Srinagar; Mr. Zail Singh visits Golden Temple (June 7). Army called out in Jammu, indefinite curfew imposed and shoot-at-sight orders issued (8). Britain apologises to Indira for BBC interview with Dr. Jagjit Singh Chohan (15). Most Gurudwaras thrown open in Punjab (21); Longowal released, arrested again; Former Maharashtra CM A. R. Antulay resigns from Indira Gandhi Pratibha Prathishtan (22).

PM visits Golden Temple, meets head priests (23). Jnanpith Award for Masti Venkatesh Iyengar (June 24). Curfew in Hubli after vilence; Golden Temple thrown open to devotees (25). Punjab Governor B. D. Pande and police chief Mr. P. S. Bhinder resign. K. T. Satarawala appointed new Governor (29).

Sri Lanka Talks. The Prime Minister, Mrs. Indira Gandhi, and the President of Sri Lanka, Mr. J. R. Jayewardene, hold talks in New Delhi; Air Marshal L. M. Katre appointed Chief of Air Staff (July 1). Farooq Abdullah's Ministry dismissed in Srinagar and G. M. Shah sworn in Chief Minister with Congress(I) support; Bombay records century's second highest rainfall (2). IA Airbus hijacked, lands in Lahore (5). Pro-Bhindranwale Sikh terrorist hijackers surrender; hostages return home (6).

White Paper on Punjab released by Union Government (July 10). Four non-Congress(I) Chief Ministers—N. T. Rama Rao, Ramakrishna Hegde, Nripen Chakroborty and Jyoti Basu—walk out of the National Development Council meeting in protest against the dismissal of Farooq Abdullah (July 13). N. T. Rama Rao leaves for New York for medical treatment (16). Baba Santa Singh, Chief of the Nihang Budha Dal, begins kar seva (voluntary repair operation) of the Golden Temple complex at Amritsar.

External Affairs Minister, P. V. Narasimha Rao, appointed Home Minister in place of P. C. Sethi given the Planning portfolio in place of S. B. Chavan designated Minister without portfolio (July 19). Terrorists breach Bhakra canal in Punjab (21). High priests excommunicate Santa Singh (22). Two Karnataka Ministers, Mrs. Chandraprabha Urs (Social Welfare) and Mr. Aziz Sait (Labour), resign from the Ramakrishna Hegde Ministry; Golden Temple at Amritsar reopened to pilgrims (27). Five stabbed in communal clashes at Hyderabad (29).

Madras Airport Blast. N. D Tiwari replaces Mr. Sripat Mishra as UP CM (August 1). Bomb explosion at Meenambakkam Airport kills 8. S. B. Chavan, Minister without portfolio made Defence Minister (2); Death toll in Madras airport explosion rises to 32 (3). Two Sri Lankans among five arrested for the bomb blast at Madras airport; Sarbat Khalsa convention in Amritsar "excommunicates" SGPC chief, G. S. Tohra (11). The five Skih priests reject decisions of the Sarbat Khalsa convention and announce a world Sikh conference on September 2 (12). N. Bhaskara Rao, Finance Minister, dropped from Chief Minister Rama Rao's cabinet in AP and three other ministers resign; A. P. Sharma resigns as Governor of West Bengal (14).

N. T. Rama Rao's Ministry dismissed by Governor in Andhra Ramlal and Bhaskara Rao sworn in Chief Minister (Aug. 16). 71 dead and 104 injured when the Jabalpur-Gondia passenger train plunges into a flooded rivulet; Andhra observes total bandh to protest against the dismissal of Rama Rao Ministry; Ten persons killed and nineteen injured as police open fire in Anantapur district to disperse violent mobs (17). Trouble spreads to more towns in A.P. as bandh is observed for the second day in succession to protest against the dismissal of Rama Rao (Aug. 18).

MLA Parade. Rama Rao parades 162 MLAs before President Zail Singh; A. P. Sharma elected to Rajya Sabha (21). R. Venkataraman elected eighth Vice-President of India (22).

MLAs supporting N. T. Rama Rao, seek refuge in Bangalore before returning for a meeting of the Andhra Assembly; Indian Army patrol opens fire in the Kargil sector of Ladakh, killing a number of armed Pakistani combatants infiltrating across the line of actual control (23).

Ramlal resigns as A.P. Governor; Indian Airlines Boeing 737 with 68 passengers and a crew of 6 hijacked to Lahore; Karnataka Governor issues orders raising the age of superannuation of Govt. servants from 55 to 58 (Aug. 24). The twelve Sikh hijackers of the Indian Airlines Boeing 737 surrender to authorities in the UAE and release all 68 passengers and 6 crew members, unharmed (25). Dr. Shankar Dayal Sharma appointed Andhra Governor (26).

World Sikh Convention at Amritsar adopts resolution excommunicating President Zail

Singh (Sept. 2). Tamil Nadu Food Minister, S. D. Somasundaram, dismissed from State Cabinet. Prof. U. R. Rao, Director of ISRO Satellite Centre, appointed chairman of Space Commission (10).

A.P. Assembly meets and adjourns in two minutes (Sept. 11). A.P. Assembly meets: *Pro-tem* speaker Banga Reddi resigns. New *Pro-tem* Speaker is Sultan Salahuddin Owaisi (13). Bhaskara Rao resigns as Chief Minister of Andhra on Governor's demand. N. T. Rama Rao, back as Chief Minister, asked to prove majority in a month. (16).

NTR Back. N. T. Rama Rao proves majority in Assembly (Sept. 20). Army withdraws from the Golden Temple; Repair of the Akal Takht complete (25). President Giani Zail Singh exonerated by Sikh highpriests (26). The Golden Temple handed over to Sikh highpriests and through them to the SGPC (29).

Pro-Bhindranwale extremists who temporarily took control of Akal Takht ousted by security forces; Vice Admiral R. H. Tahiliani appointed Chief of Naval Staff (Oct. 1). Unilateral ceasefire by Mizo rebels ordered by Laldenga (2). One dies, 300 hurt in football stadium collapse in Trivandrum; Judicial probe into the Moily tape episode ordered (9). Kar Seva of the Holy tank in the Golden Temple begins (12). PM tours drought-hit Andhra areas—announces Rs. 20 crore interim aid (Oct. 14).

Tamil Nadu CM MGR suffers a stroke (Oct. 14). Somnath Lahiri (75), CPI leader and former minister, dies (19). Japanese neurologist arrives to examine MGR (20). New party called Dalit Mazdoor Kisan party formed under the leadership of Charan Singh (21). Laldenga in Delhi for talks to end insurgency in Mizoram (29).

Indira Assassinated. Indira Gandhi assassinated by two of her own security guards at her residence in Delhi. Rajiv Gandhi sworn in Prime Minister (Oct. 31).

Violence following Mrs. Gandhi's assassination takes heavy toll; World dignitaries arrived in Delhi to pay homage to Mrs. Gandhi (Nov. 2). The body of Mrs. Gandhi consigned to flames; World pays a tearful

In Revered Memory: On October 31, 1986, the 2nd anniversary of Indira's death, Prime Minister Rajiv Gandhi and family offer flowers at Shakti Stala, New Delhi homage; Violence continues in New Delhi; Toll rises to 900; Curfew reclamped; Delhi Lt. Governor Mr. P. G. Gavai replaced by M. M. K. Wali; MGR flown to New York in a special plane (3).

Major police shake-up in Delhi, four officers suspended and new security staff posted at PM's residence; Night curfew continues in Delhi; Sikh families take shelter at protection camps. MGR admitted to New York hospital (Nov. 6). Big shake-up at the top level of intelligence setup (7). Bombay High Court holds removal of nine part-time directors of Escorts illegal (9). 11 more Ministers inducted into AP Ministry.

Rajiv Gandhi elected Congress(I) President (Nov. 12). Lok Sabha elections announced for Dec. 24 and Dec. 27; Simultaneous Assembly poll in Tamil Nadu (13). TN assembly dissolved (15). Department of electronics announces new policy to liberalise manufacture and import of computer systems (19). MGR's nomination papers filed from Andipatti constituency in Madurai district; AP Assembly dissolved; N. T. Rama Rao seeks fresh mandate; 25 killed as two bogies of a local train in Byculla (Bombay) derail (22). Y. B. Chavan (71), former Deputy Prime Minister, dies (25).

UK Deputy High Commissioner Mr. Percy Norris shot dead in Bombay; Veteran CPI leader and ex-MP M. N. Govindan Nair (74), dies (27). Over 6,200 candidates to contest for 513 Lok Sabha seats—straight contests between Congress(I) and opposition for about 200 seats; Admiral R. H. Tahiliani takes over as chief of Naval staff; Mr. G. S. Tohra reelected SGPC chief (30).

Bhopal Disaster. 2,500 persons killed and 2,000 badly affected when they inhaled poisonous gas escaping from an insecticide plant in Bhopal (Dec. 3). Sri Lankan gunboats sink unarmed Indian trawler (6). The chairman of Union Carbide Warren Anderson arrested and released in Bhopal (7). Justice Thakkar Commission to enquire into the assassination of Indira Gandhi (10). Asoka Mehta, former Union Minister, dies (11).

First MIG 27M aircraft assembled by HAL takes off (Dec. 14). More than four tonnes of MIC neutralised in Bhopal (6). MGR has kidney transplant; operation successful; All of MIC in Bhopal Union Carbide Plant converted into carbaryl; appeal to people to return to city (19). Centre suspends manufacture of MIC-based pesticide; Polling for eighth Lok Sabha and Tamil Nadu Assembly (24).

Supertanker Hit. Indian supertanker "Kanchenjunga" carrying 20,00,000 tonnes of oil hit in the Gulf; Poll violence toll 15 on the 1st day of the three-phase polling (Dec. 25). Poll Commission orders seizure of records of the Dist. Hospital and the Police at Rae Bareli relating to the death of Harshwaroop Bajpai, an independent candidate.

Election Commission countermands election from Rajampet constituency on the death of an independent candidate; Election Commission fixes January 28, 1985 for the by-election in the Uduma and Peringalam constituencies; Japan gives India soft loans of 61,460 million yen (about Rs. 300/- crores) for development projects (26). Congress(I) makes big gains (28). Ramakrishna Hegde, Karnataka Chief Minister resigns and recommends dissolution of the Assembly, following the Lok Sabha poll verdict; AIADMK sweeps back to power winning 198 of the 232 Assembly seats (29).

1985: 10 villagers, alleged to be Naxalites, and two policemen killed in an encounter in Kaithi Bigha, Bihar; Doordarshan starts Malayalam telecast from Trivandrum (January 1).

Karnataka Assembly dissolved; Gegong Apang sworn in Chief Minister of Arunachal Pradesh; 23 persons killed in Mohaddipur, Uttar Pradesh, when a long-standing village dispute led to violence (2). Rishang Keishing sworn in Chief Minister of Manipur (4). P.N. Malhotra appointed RBI Chief (5). Pratapsingh Rane sworn in Chief Minister of Goa (8). Ravi Shastri hits Baroda left-arm spinner Tilak Raj for six sixes in one over of a Ranji Trophy cricket match (10).

Indian coast gurad vessel captures Sri Lankan patrol boat; 1983 Jawaharlal Nehru award for International Understanding presented to former Austrian Chancellor Bruno Kreisky in New Delhi (11). Balram Jakhar unanimously elected Speaker of the Lok Sabha (16). A British film, The Bostonians and a Russian film, Ruthless Romance, share the Golden Peacock at the 10th International Film Festival of India in New Delhi; Adoor

Gopalakrishnan's "Mukhamukham" wins the International Federation of the Film Press award at Delhi Film Festival (17).

Spy Ring Cracked. Spy ring cracked. Top Government officials, businessmen held (18). Dr. P.C. Alexander, Principal Secretary to the PM quits following the arrest of three aides in an espionage case (19). Padma Vibhushan for M.G.K. Menon, Padma Bhushan for Thakazhi Sivasankara Pillai and Padmasri for P.T. Usha (25). Asha Aggarwal wins Hong Kong international women's marathon (27).

Prime Minister Rajiv Gandhi, Greek Prime Minister Andreas Papandreou, Swedish Prime Minister Olof Palme, Tanzanian President Julius Nyerere, Mexican President Miquel de la Madrid and Argentinian President Raul Alfonsin meet in New Delhi and call for the prevention of an arms race in outer space; 1984 Jawaharlal Nehru award for international understanding posthumously conferred on Indira Gandhi (28).

Sri Lanka releases 17 Indian fishermen and their boats, seized last year. India hands over Lankan patrol boat (29). Anti-defection bill passed unanimously by the Lok Sabha (30). Left Democratic Front wins all 3 by-elections to Kerala Assembly (31).

Mohammad Azharuddin becomes the first man in cricket history to hit a century in each of his first three tests; King Jigme Singye Wangchuk of Bhutan arrives in New Delhi on a state visit (February 1).

Tamil Nadu Chief Minister M.G. Ramachandran returns to Madras after miraculously recovering from a complicated illness in a US hospital (4). 174 couples married in dowry-free community wedding at Keerampara, Kerala (6).

Two Kashmiri separatists sentenced to life imprisonment in Birmingham for the murder of Indian diplomat Ravindra Mhatre there in February 1984 (7). Cargo plane carrying arms from Lisbon to Colombo detained at Trivandrum, when it landed without fuel (9). M.G. Ramachandran sworn in for a new term as Chief Minister of Tamil Nadu (10). Polish Prime Minister Wojciech Jaruzelski arrives in New Delhi on a state visit (11).

Fire in Ship. A fire on M.V. Chidambaram, an Indian liner sailing from Singapore to Madras, kills 34 (12). Two Indian fishermen killed as Sri Lankan naval vessel opens fire on their boat; Dr. Nagendra Singh elected world court chief (14). Punjab National Bank Chairman and Managing Director S.L. Baluja, Central Bank Chairman and Managing Director B. V. Sonalker and Bank of Baroda Executive Director S.S. Master dismissed by the Government (18). 13 Army Jawans and a civilian killed in an ambush by Naga insurgents in Manipur (19).

Ocean Rights For India

India has been recognised as a "pioneer investor" and given exclusive rights to explore and commercially exploit 52,300 square kms in the Indian Ocean under a formula agreed to by a United Nations commission.

The session of the preparatory commission for the International Sea-bed Authority and the International Tribunal for the Law of the Sea also agreed that France, Japan and the Soviet Union would share in the exploration and commercial exploitation of the north-east Pacific Ocean.

The formula was hammered out after prolonged debate in the commission.

To qualify as a "pioneer investor", a country must have spent at least 30 million dollars on sea-bed activities as of January 1, 1983. However, developing countries, except India, for which a separate provision was made, have two more years to qualify.

Independent Rajasthan MLA Raja Man Singh shot dead by police (21). Rajasthan Chief Minister Shiv Charan Mathur quits, owning moral responsibility for the killing of Raja Man Singh; Heera Lal Deopura sworn in Chief Minister – Train fire kills 70 in Madhya Pradesh (23).

Rajendra Sethia, the biggest personal bankrupt ever, arrested in New Delhi (March 1). Mani and Joseph factions of Kerala Congress merge to form a single party (3). The 9-square-foot Belgaum ballot paper carries the names of 301 candidates for an Assembly seat (5).

51 persons are drowned as a boat capsizes off Cuddalore (6). Ramakrishna Hegde sworn

in Chief Minister of Karnataka, Virbhadra Singh Chief Minister of Himachal Pradesh and Nar-Bahadur Bhandari Chief Minister of Sikkim; V.M. Sudheeran elected Kerala Assembly Speaker (8). N.T. Rama Rao sworn in Chief Minister of Andhra Pradesh (9).

CMs Changed. J.B. Patnaik sworn in Chief Minister of Orissa, Hardeo Joshi Chief Minister of Rajasthan and Vasantrao Patil Chief Minister of Maharashtra; India beats Pakistan by 8 wickets in the final of the Benson and Hedges world championship of cricket in Melbourne. Ravi Shastri is declared champion of champions and Sunil Gavaskar steps down from the captaincy (10). Madhavasinh Solanki sworn in Chief Minister of Gujarat, N.D. Tiwari Chief Minister of Uttar Pradesh and Arjun Singh Chief Minister of Madhya Pradesh; Akali Dal president Sant Harchand Singh Longowal released (11). Arjun Singh named Punjab Governor. Mohammad Usman Arif appointed Governor of Uttar Pradesh and P. Venkatasubbaiah Governor of Bihar; Bindeswari Dubey sworn in Chief Minister of Bihar (12).

Prime Minister Rajiv Gandhi in Moscow for the funeral of Konstantin Chernenko, meets new Soviet leader Mikhail Gorbachev, US Vice-President George Bush, Pakistan President Mohammad Zia-ul-Haq and other world leaders. Motilal Vora sworn in Chief Minister of Madhya Pradesh (13). Steep hike in passenger and freight rates in Bansi Lal's railway budget (14).

Innovative Budget. Finance Minister V.P. Singh presents innovative tax reductions and duty exemptions along with a deficit on Rs.3.349 crore in his maiden budget: M.O.H. Farook sworn in Chief Minister of Pondicherry (16). The US embassy says that Soviet diplomat Igor Gueja, who disappeared in New Delhi, flew to the United States, sought and was granted asylum there (17)

Punjab National Bank manager Amarjeet Singh arrested on charges of conspiring with Rajendra Sethia and defrauding three Indian banks of over Rs.250 crores (18). Soviet embassy official Victor Khitzichenko shot dead in New Delhi (21). BJP local unit general secretary Krishan Lal Manchanda and student leader Makhan Singh shot dead in Chandigarh (24). Indian Airlines offers instant booking with its new computerized system (25).

India beats Australia by three wickets in the final of the Rothmans tournament in Sharjah to remain undisputed champs in limited overs cricket (29). Chandrasekhar Singh sworn in Union Minister of State for Textiles; Four accused in Vypeen liquor tragedy case sentenced to 6 years rigorous imprisonment and a fine of Rs.11,000 (30).

Union Agriculture Minister Buta Singh excommunicated from the Sikh panth; Mauritian Prime Minister ***Aneerood Jugnauth*** in Delhi (April 2). More than 40 people travelling on the roofs of two trains killed after being hit by scaffolding erected to paint an overbridge in Uttar Pradesh; Eight policemen killed in TNV ambush (5).

Bombay wins the Ranji Trophy for the 30th time, beating Delhi by 90 runs in the golden jubilee year of the national cricket championship (6). 15 die as IAF plane crashes in a village near Bareilly; Karunakaran Government survives no-confidence motion in the Kerala Assembly (9). Judicial probe ordered into the riots in Delhi, following Indira Gandhi's assassination. Ban on the All-India Sikh Students Federation lifted (11). British Prime Minister Margaret Thatcher meets Prime Minister Rajiv Gandhi in New Delhi (13). New Zealand Prime Minister David Lange visits New Delhi (15).

SWAPO comes to Delhi. Full diplomatic status for SWAPO representative in New Delhi; SPGC chief G.S. Tohra released (19). NAM meet on Namibia adopts in New Delhi a resolution calling for sanctions against South Africa and an action plan to rush more economic and military assistance to SWAPO (21). The Supreme Court awards maintenance to a divorced Muslim woman (23). Lenin Peace Prize posthumously awarded to Indira Gandhi (25). Union Government declares moratorium on 3 banks — Bank of Cochin, Lakshmi Commercial Bank, New Delhi, Miraj State Bank, Rajasthan (27).

S.P. Jogota, former Additional Secretary in the External Affairs Ministry unanimously elected chairman of the International Law Commission (May 1). 65 drowned in boat disaster on the Chambal river in Madhya Pradesh (3). CPM leader in the Lok Sabha Saradish Roy dead (5). Adoor Gopalakrishnan adjudged Best Director (Mukhamukham)

The 1,50,000 Anglo-Indians

The Anglo-Indian comunity which enjoyed a position of prestige and prosperity in the pre-independence days, today faces acute unemployment and poverty.

This was stated by a committee of nominated Anglo-Indian members of Andhra Pradesh, Tamil Nadu, Karnataka and Kerala assemblies which went into the issue.

The committee, consisting of Mr. Stephen Padua (Kerala), Mr. Joss Fernandez, (Karnataka), Prof. G. K. Francis (Tamil Nadu) and Mrs. Marjorie Godfrey (Andhra Pradesh), says the community is facing a grave crisis — almost a question of survival.

The Anglo-Indian population in the country is estimated at between 1,50,000 and 2,00,000. Over 70 per cent of them reside in the four southern states. Kerala accounts for the bulk of them (about 70,000) followed by Tamil Nadu (about 35,000), Karnataka (about 15,000) and Andhra Pradesh (about 10,000).

The community enjoyed certain safeguards for the first ten years after the constitution came into force. From 1960 they lost everywhere except in Kerala.

In Kerala, there is a free education scheme for Anglo-Indians in colleges. Anglo-Indians are tagged on to Latin Christians and together they get four per cent reservation in appointments in the public services. One seat each for medical education and agricultural B.Sc. course have been reserved for Anglo-Indians. There are also scholarships for needy girl students in high schools.

Recently, Karnataka reserved one MBBS, one engineering, one basic B.Sc. nursing and two polytechnic seats for Anglo-Indian students.

In Tamil Nadu, a scheme has been introduced for fee-reimbursement for all Anglo-Indian students.

Their demands include extension of the period of nomination of Anglo-Indians in Parliament and state assemblies beyond 1991 for another 20 years and to ensure that the MPs representing the community are from the south as the bulk of the community is in the south.

in national film awards (7).

Bombs that look like transistors explode in and around Delhi, killing more than 80 people; Punjab Lok Dal President Balbir Singh shot dead in Chandigarh; P.N. Bhagawati appointed Chief Justice of the Supreme Court (10). Dr. P.C. Alexander appointed High Commissioner in Britain; The US Federal Bureau of Investigation claims to have foiled a plot by Sikh extremists to assassinate Prime Minister Rajiv Gandhi (18).

Communist leader P. Sundarayya dead.

20. Lok Sabha passes a bill providing stiffer punishment for terrorism (19). Prime Minister Rajiv Gandhi visits Moscow and signs two agreements with General Secretary Mikhail Gorbachev (22). J.N. Dixit takes over as India's High Commissioner in Sri Lanka; 74 drowned in Chambal boat accident; Kerala Health Minister K.P. Ramachandran Nair resigns from the cabinet (27) Moore Market destroryed in pre-dawn fire in Madras (30).

Patil Resigns. Maharashtra Chief Minister Vasantrao Patil resigns (June 1). Prime Minister Rajiv Gandhi and Sri Lankan President J.R. Jayewardene meet in New Delhi, fly together to Dhaka and accompanied by President H. M. Ershad visit the cyclone-hit areas of Bangladesh (2). Shivajirao Patil-Nilangekar sworn in Chief Minister of Maharashtra; Central Government offices switch to 5-day week (3).

Prime Minister Rajiv Gandhi meets Egyptian President Hosni Mubarak in Cairo; Kerala Electricity Minister R. Balakrishna Pillai resigns after a petition challenging his continuance in office was admitted in the High Court (5). Festival of India opens in Paris. Rajiv Gandhi meets French President Francois Mitterrand and Prime Minister Laurent Fabius; 50 people killed, more than 100 injured and thousands flee as the police forces of Assam and Nagaland clash at Merapani on the interstate border (7)

Prime Minister Rajiv Gandhi meets President Chadli Benjedid in Alglers (10). Nehru Science Award for M.G.K. Menon (12). 37 persons killed in train collision near Agra (13).

Rajiv Gandhi concludes his first visit to the United States as Prime Minister. He meets President Ronald Reagan and other leaders, addresses Congress, answers questions at the National Press Club and is present at the opening of the Festival of India in America (16). Rajiv Gandhi addresses the 71st session of the International Labour Organisation in Geneva. He also receives the John C. Philips memorial medal awarded to Indira Gandhi by the International Union for Conservation of Nature (17).

The Medal of Freedom, America's highest civilian decoration, presented to Mother Teresa by President Ronald Reagan in Washington (20). Nitya Nanak and Nitya Ram, two ships belonging to a Bombay-based company, with a total of 44 persons on board vanish of the coast off Tamil Nadu (21).

'Kanishka' Crash. All 329 persons on board are killed as an Air-India Boeing 747 flying from Toronto to Bombay via Montreal, London and New Delhi crashes into the North Atlantic (23). India's first batch of Mirage fighter planes arrive from France (29).

Air Chief Marshal L.M. Katre dead (July 1). Davids Antony la Fontaine appointed Air Chief Marshal (3). Gujarat Chief Minister Madhavsinh Solanki resigns. Home and Education Minister Amarsinh Chaudhary takes over (6). Talks open in Thimphu between representatives of the Sri Lankan Government, the Tamil United Liberation Front and five Tamil militant groups (8).

The cockpit voice recorder and the digital flight data recorder of the Air-India Boeing 747 which crashed into the Atlantic picked up from under 6,700 feet of water by the SCARAB robot submarine operated from a French ship. Nothing had ever before been brought up from such a depth (11). Mahesh Bhatt's Saransh, the official Indian entry at the Moscow International Film Festival, wins a special award (12).

Dr Rajinder Singh, s Simla dentist, wins the world speed typing championship in Sofia with a speed of 483 strokes per minute and an accuracy of 99.97 per cent (14). Six Harijans killed by caste Hindus in Karamachedu, Andhra Pradesh (16). Anti-reservation agitation in Gujarat withdrawn (19).

Punjab Accord. Prime Minister Rajiv Gandhi and Akali Dal president Sant Harchand Singh Longowal meet in New Delhi and sign an agreement ending the four-year agitation in Punjab; Maj Gen (Retd) F.D. Larkins, his brother Air-Vice Marshal K. H. Larkins and Lt Col Jasbir Singh sentenced to 10 years rigorous imprisonment for passing on classified information to American agents (24). Jnanpith Award for Thakazhi Sivasankara Pillai (29). Congress (I) MP Lalit Maken, his wife, and a visitor at their residence in Delhi shot dead by terrorists (31).

Ramon Magsaysay award for public service goes to Baba Amte; All India Muslim League merges with the Indian Union Muslim League (August 3). Geet Sethi of India beats Bob Marshal of Australia 3,809-2,453 in the final of the world amateur billiards championships in New Delhi (7). Gandhiji's ashram in South Africa destroyed by rioters (9). 52 killed in Bombay house collapse (13). Accord reached on the Assam foreign nationals issue. Agitation called off (15).

Assam Assembly dissolved (18). Full bench of Kerala High Court dismisses petition against former Electricity Minister R. Balakrishna Pillai (19). Akali Dal president Sant Harchand Singh Longowal shot dead near Sangrur; DCC (I) secretary Dev Dutt Khullar shot dead in Jalandhar (20). INS Mysore, which played a prominent part in the liberation of Goa and in the Bangladesh war and had served the Indian Navy for 28 years, decommissioned (28).

Development officer Jawahar Deholakia of the Rajkot branch of the LIC enters the Guinness Book of World Records for having secured over Rs.1 crore worth of business for the 17th year in succession (September 1). Congress (I) metropolitan councillor Arjun Dass and his bodyguard Vajinder Singh shot dead in Delhi (4).

Honour for Usha. P.T. Usha declared Best Athlete at World Railways Meet in Olomouc, Czechoslovakia (6).

President Zail Singh promulgates an ordinance limiting the provision for countermanding of an election to the case of the death of a candidate set up by a recognised political party (8). Chief Justice V.S. Malimath of Karnataka transferred to Kerala High

Record Number of Women MPs

There is a record number of 80 women members in both Houses of Parliament, Minister of State for Women and Child Development Margaret Alva told the Rajya Sabha.

There were eight women Ministers in the Union Council of Ministers, an all-time record, Mrs. Alva said replying to a question in August on the status of women in the country.

The Centre has requested the State Governments to make provision for reservation of seats for women in village panchayats and other civic bodies, Mrs. Alva said.

The Government was also considering reconstitution of the national committee on women which was set up in 1978 but not reconstituted after its two-year term.

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There are 25 women IPS officers in the country of whom three are in Karnataka, Minister of State for Home Arun Nehru informed the Lok Sabha last year.

Each officer belonging to the Indian Administrative Service will have to undergo a one-week refresher course every year "in several identified specialisations" under the training programme launched in 1986. Minister of State for Personnel Grievances P. Chidambaram told the House.

The focus of the course for officers of nine years' service is on "programme implementation", for officers of 10-16 years' service on "management concepts and decision making" while the course for officers of 17-20 years' service relates to "policy planning and analysis".

Court and Chief Justice K. Bhaskaran of Kerala to Andhra High Court (16). Nepal's King Birendra in New Delhi (18). Uttar Pradesh Chief Minister N.D. Tiwari resigns (23). Veer Bahadur Singh sworn in Chief Minister of Uttar Pradesh; Union Minister of State for Tourism and Civil Aviation Ashok Gehlot resigns (24).

Reshuffle of the Union Cabinet. K.R. Narayanan becomes Minister of State for External Affairs and Krishna Kumar Deputy Minister for Family Welfare (25) Surjit Singh Barnala sworn in Chief Minister of Punjab after a massive Akali Dal victory in the state elections; Prime Minister Rajiv Gandhi meets King Jigme Singye Wangchuk in Thimphu and receives Bhutan's highest honour, the Druk Wangyal Award, posthumously conferred on Indira Gandhi (29).

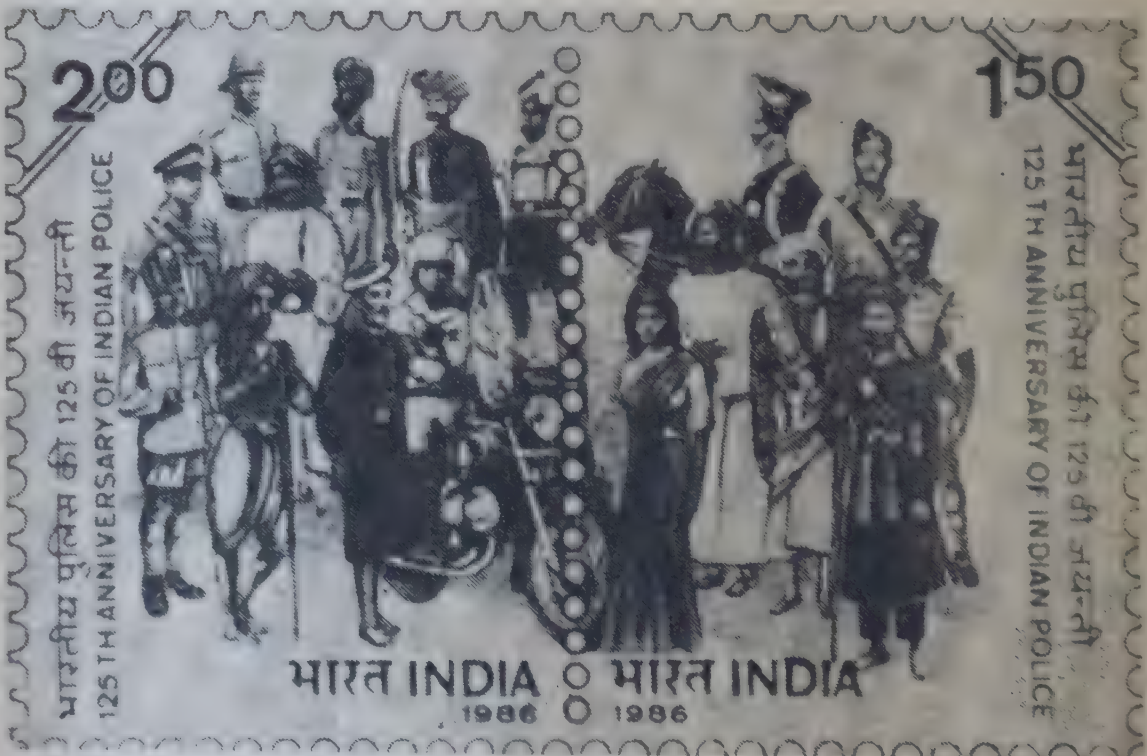
Morocco breaks diplomatic relations with India after New Delhi announced its recognition of the Saharwi Arab Democratic Republic proclaimed by the Polisario rebels fighting the Moroccan Government in the Western Sahara (October 3). 4 jawans of the Indian Army's Everest expedition killed (11). British police arrest 15 suspected terrorists amid reports that a plot to assassinate Prime Minister Rajiv Gandhi has been cracked (12). Rajiv Gandhi visits Britain. President Zail Singh visits Lakshadweep (14). Prime Minister Rajiv Gandhi visits Havana and receives the National Order of Jose Marti, Cuba's highest honour, posthumously conferred on Indira Gandhi (21).

The Nelson Mandela medal instituted by the Holland committee on South Africa, presented to Rajiv Gandhi at the United Nations, in recognition of India's contribution to the struggle against apartheid (22).

UN at Forty. Rajiv Gandhi, in New York for the 40th anniversary of the United Nations, holds talks with several world leaders, including President Mohammad Zia-ul-Haq of Pakistan (23). Athletes P.T. Usha and Shiny Abraham win Arjuna Awards (24).

Rajiv Gandhi visits the Hague and meets Dutch Queen Beatrix (25). Rajiv Gandhi, flying back from a five-nation tour makes an unscheduled stopover in Moscow and meets General Secretary Mikhail Gorbachev. The second dharma sansad organised by the Vishwa Hindu Parishad opens in Udupi (31)

Petrol tanker explodes on the road near Gulbarga, killing 67 (November 1). Melattur Balu Bhagavathar dead (4). Preeti Arora retains world arm wrestling title (5). Film star Sanjeev Kumar dead; 82 killed in bus accident in Himachal Pradesh (6). A clash between people of two castes leaves 12 dead in Munger, Bihar (10). Prime Minister Rajiv Gandhi dedicates to the nation the Dhruva research reactor at the Bhabha Atomic Research Centre (11).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125TH ANNIVERSARY OF INDIAN POLICE
भारत INDIA
1986

Indian Police is 125: The Indian Police Force which was created under an act of 1861 celebrated 125 years of its existence last year. The above is the facsimile of the special stamps issued by the postal department on the occasion.

Over 180 people killed as incessant rain batters Tamil Nadu, Madras City, which received in 48 hours more than twice the average rainfall for an entire season, is almost totally under water. Even Chief Minister M.G. Ramachandran has to leave his residence and move to higher ground (13).

Punjab Governor Arjun Singh and Delhi Lt Governor M.M.K. Wali resign. Andhra Pradesh Governor S.D. Sharma shifted to Punjab, Kumudben Joshi takes his place in Andhra Pradesh. Air-Vice Marshal (Retd), H.L. Kapur succeeds Wali in Delhi. Vasantrao Patil named Governor of Rajasthan; Doordarshan begins teletex service (14). Arjun Singh sworn in as Union Cabinet Minister for Commerce (15). 70 drowned in Agra boat accident (15).

Rajneesh Returns. Acharya Rajneesh returns to India after four years in the United States during which he set up a commune-city, acquired a fleet of 93 Rolls

Royces and other riches, dabbled in local politics, remained under a vow of silence for several months, burnt his books and declared his religion, Rajneeshism, dead, got the AIDS scare and put the skids on his wild orgies, quarrelled with his secretary, Ma Anand Sheela, leading to a general mess-up in which everone pointed an accusing finger at everyone else; was arrested, pleaded guilty to some charges and was finally released and allowed to leave the country; Prime Minister Rajiv Gandhi in Muscat (17).

PLO Chairman Yasser Arafat meets Prime Minister Rajiv Gandhi in New Delhi (19). Rajiv Gandhi visits Lakshadweep (22). Maharashtra Congress (I) MLA D.B. Kadam's body found in Delhi. He was allegedly beaten to death after he tried to harass a married woman of the locality; Two Indian diplomats injured in attack by Sikh pilgrims in Lahore (26). Prime Minister Rajiv Gandhi visits Vietnam (27).

India and Japan sign a science and technology co-operation agreement in Tokyo. Rajiv Gandhi meets Prime Minister Yasuhiro Nakasone; Subbash Aggarwal scores 1,788 points to set world record in amateur billiards (28). Three constables sentenced to life imprisonment for murdering Sub-Inspector George Soman at Panoor, Kerala (29).

India wins the Sultan Azlan Shah trophy, beating Pakistan 4-2 in final of the six-nation hockey tournament in Ipoh, Malaysia (December 3). On the first anniversary of the Bhopal gas tragedy poisonous gas leaks from a Delhi factory, claiming one life and affecting hundreds; 6 Killed as police fire on rioting fishermen on Marina beach in Madras (4). "Jehova's Witnesses" have to sing the national anthem, rules Kerala High Court (7). Industrialist S.L. Kirloskar arrested and let off on bail (12).

Kalpakkam Dedicated. Prime Minister Rajiv Gandhi joins the leaders of Greece, Sweden, Tanzania, Mexico and Argentina in a teleconference as part of the UN ceremony at which they are honoured with the 'Beyond War award' (14). Rajiv Gandhi dedicates to the nation the fast breeder test reactor at Kalpakkam (16). Rajiv Gandhi and Pakistan President Zia-ul-Haq meet in Delhi and agree not to attack nuclear plants in each other's countries; In Adelaide Sunil Gavaskar hits his 31st century and becomes the first man to make more than 9,000 test runs (17).

P.T. Abraham who single-handedly fought the Union Government's discrimination against recruits from Kerala, West Bengal and Tripura compensated for all the losses caused by delay in appointment (18). Ethiopian leader Mengistu Mariam Haile arrives in New Delhi on a state visit (20).

Prafulla Kumar Mahanta shifts from a university hostel to the Chief Minister's residence after the Asom Gana Parishad secured an absolute majority in the Assam Assembly elections and elected him leader (24). In Bombay the Congress (I) celebrates the 100th anniversary of the founding of the Indian National Congress (26).

THE CONSTITUTION

The Constitution of India came into effect on 26th January 1950. It was drawn up by a Constituent Assembly initially summoned on Dec.9, 1946. The constitution was adopted on Novermber 26, 1949.

The Constituent Assembly was initially summoned for undivided India. With the partition of India in June 1947, the delegates of the Pakistan areas ceased to be members of the Assembly. On August 14, 1947, the Constituent Assembly met again as the Sovereign Constituent Assembly for the Dominion of India under the Presidentship of Sachidananda Sinha. On the demise of Sinha, Dr. Rajendra Prasad became the President of the Assembly. A draft Constitution was published in February 1948. The Constitution was finally adopted on 26th Nov. 1949. It came into effect on 26th Jan. 1950.

Basic Features. The Indian Constitution closely follows the British Parliamentary model but differs from it in one important respect. In Britain, the Parliament is supreme. No court can question the validity of any law passed by the British Parliament. In India the Constitution is supreme, not the Parliament. So the Indian courts are vested with the authority to adjudicate on the constitutionality of any law passed by Parliament.

This position, otherwise clear, was complicated by the action of the Constituent Assembly itself. Having promulgated the Constitution, the Constituent Assembly converted itself into the first Indian Parliament. Thus the creator of the constitution, the Constituent Assembly, became the creature of the constitution, the Parliament. In the very second year of promulgating the constitution, the first Parliament set out amending it. This was the *First (Constituion) Amendment Act. 1951.* This amendment planted the seeds of the future trouble between the Parliament and the Judiciary. It clearly showed that the Parliament possessed both constituent and legislative powers. Subsequent Parliaments naturally claimed plenary powers to amend the constitution, in any manner they thought fit.

The powers claimed by Parliament, on the one hand, and the rights vested in the Judiciary, on the other, were bound to clash in the long run. And so they did. The conflict at first centred round specific provisions of law passed by Parliament. When any such provision was declared unconstitutional, the laws were either amended to suit the constitution or the constitution was amended to suit the laws. Such a course naturally precipitated the question whether Parliament possessed unlimited powers to amend the constitution.

Power to Amend. The question came up in the Keshavananda Bharati case (1973) where the Supreme Court ruled that the power of amendment vested in the Parliament under Art. 368 (relating to amendment of the constitution) cannot be so exercised as to alter or destroy the basic structure of the constitution. If Parliament had the power to destroy the basic structure of the constiution, it would cease to be a creature of the constitution and become its master.

The question came up again in the Minerva Mills case, after the 42nd amendment was passed. The 42nd amendment effected a constitutional revolution, whereby Parliament overthrew the supremacy of the constitution and made itself supreme in its stead. The first question before the court was whether the Parliament had unbounded powers to amend the constitution.

The Supreme Court delivered its judgement in the Minerva Mills case on May 9, 1980. The court held that the Parliament cannot expand its amending power under Art. 368, so as to abrogate the constitution or to destroy its essential feature. Their Lordships observed, "The donee of a limited power cannot by exercise of that power convert the limited power into an unlimited power". The avowed purpose of the 42nd amendment was to remove doubts.

"But", said the Court, "after the decision of this court in Keshavananda Bharati case, there could be no doubt as regards the limitations of Parliament's power to amend the constitution. The new clause (5) of Art. 368 confers on the Parliament an undefined power to amend the constitution, even so as to distort it out of recognition...No constituent power can conceivably go higher than the skyhigh power conferred by clause (5), for, it even empowers the Parliament to repeal provisions of the constitution, that is to say, destroy democracy and substitute for it a totally antithetic form the government."

Balance of Power. Another question before the Court was whether the Parliament had the power to bar the jurisdiction of the court to enquire into the constitutional validity of laws. On this question the court ruled that "Our constitution is founded on a nice balance of power among the three wings of the State, namely the Executive, the Legislature and the Judiciary. It is the function of Judges, nay their duty, to pronounce upon the validity of laws."

"Human dignity" (sic), the court observed, has not yet devised a system by which the liberty of the people can be protected, except through the intervention of courts of law". Again, "The conferment of the right to destroy the identity of the constitution, coupled with the provision that no court of law shall pronounce upon the validity of such destruction, seems to us a transparent case of transgression of the limitations on the amending power."

A third question which the court had to counsider was the precedence of Directive Principles over Fundamental Rights. This question was first projected by the 25th amendment. This amendment gave precedence to two clauses of Directive Principles as against Fundamental Rights. They are Art. 39(b) which related to the ownership and control of the material resources of the community and Art. 39(c) which concerned the question of concentration of wealth in a few hands to the detriment of the community.

The court conceded the application of the principle to the two clauses in question. In the 42nd amendment, this precedence was extended to all the Directive Principles. The court objected to this extension and ruled that "to destroy the gurantees given by Part III (Fundamental Rights) in order purportedly to achieve the goals of Part IV (Directive Principles) is plainly to subvert the constitution by destroying its basic structure".

So far only the three points mentioned above have been identified as Basic Features of the constitution. What the other basic features (if any) are, remains to be elucidated.

The Constitution consists of the following: 1. The Preamble. 2. Parts I to XXII covering Articles 1 to 395. 3. Schedules 1 to 10 ⋆ and 4. An Appendix‡.

The Preamble. The Preamble declares India a sovereign *Socialist Secular* Democratic Republic and lays down the primary objects of the constitution, namely, to secure to all citizens justice, social, economic and political, liberty of thought, expression, belief, faith and worship, equality of status and opportunity and fraternity assuring the dignity of the individual and the unity and the integrity of the nation.

The words *'socialist, secular'* and *'the unity* and *the integrity of the nation'*, were added by th 42nd Amendment.

Structure. India, that is Bharat, shall be a Union of States (Art. 1). The States and Territories thereof shall be as specified in the first Schedule (Art.2).

Distribution of Powers. The Union has exclusive power to make laws on all matters in List I of the Seventh Schedule (Union List). The States have exclusive power to make laws on all matters in List II (State List). The Union and States have concurrent powers to legislate on any matter enumerated in List III (Concurrent List) (Art. 246).

Residuary Powers. The Union has exclusive power to make laws on any matter not enumerated in the Concurrent List or State List (Art. 248).

Over-riding Powers. In case of any conflict between Union laws and State laws, the Union laws shall prevail (Art.254).

Citizenship rights are given to every person who is born in India or either of his parents was born in India or who has been a resident of India for 5 years, immediately preceding the commencement of the Constitution.

The Constitution of India commenced on the 26th January 1950.

Fundamental Rights. Seven Fundamental Rights are granted to citizens under Arts. 12 to 35 of the Constitution (Part III). They are: 1. Right to Equality, 2. Right to Freedom, 3. Right against exploitation, 4. Right to freedom of Religion, 5. Cultural and Educational Rights, 6. Right to Property and 7. Right to constitutional Remedies, that is to say, all citizens are guaranteed the right to move the Supreme Court or the High Courts by appropriate proceedings for the enforcement of Fundamental Rights.

The 16th and 24th Amendments have considerably limited the exercise of Fundamental Rights. Two, in particular, (the Right to Freedom and the Right to Property) have been reduced to names by the 1st, 4th and 24th amendments. The State is empowered to pass laws imposing reasonable restrictions on the exercise of these two rights.

Directive Principles. The Directive principles of state policy are contained in Arts. 36 to 51 of the Constitution (Part IV). These lay down 19 objectives covering a wide range of subjects, which the State shall endeavour to achieve. These are not enforceable at law like Fundamental Rights. Nevertheless, they are declared fundamental to the governance of the country.

Subsequent amendments starting with the 25th have attempted to give precedence to Directive Principles over Fundamental Rights. The 25th amendment restricted such precedence to two objectives, contained in cl. (b) and (c) of Art. 39. They relate to the equitable distribution of material resources and the

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⋆ Schedule 10 was omitted by 36th Amendment, but was added again in 1985 by the 52nd Amendment.

‡ Appendix contains the order extending the application of the constitution to Jammu & Kashmir.

concentration of wealth in the hands of a few to the detriment of many. These, it may be noticed, were already secured by the amendments to Fundamental Rights which empowered the State to impose reasonable restrictions to the right to property. The 42nd amendment sought to extend this precedence to all objectives specified in Directive Principles. This provision was struck down by the Supreme Court (see supra.)

The President. There shall be a President of India (Art. 52) who is the Executive head of State—[Art. 53—(1)]—and the Supreme Commander of the Armed forces Art. 53(2). The President shall be elected from an electoral college consisting of (a) the elected members of both Houses of Parliament and (b) the elected members of the Legislative Assemblies of the States (Art. 54). The President shall hold office for five years Art. 56(1) and is eligible for reelection (Art. 57).

The Vice-President shall be elected by the members of an electoral college consisting of the members of both houses of Parliament Art. 66(1). The Vice-President may hold office for five years (Art. 67), and shall be the ex-officio Chairman of the Council of States (Art. 64).

Council of Ministers. There shall be a Council of Ministers with the Prime Minister at the head to aid and advise the President in the exercise of his functions—[Art. 74(1)]. The Prime Minister shall be appointed by the President, and the other Ministers shall be appointed by the President, on the advice of the Prime Minister—Art. 75(1). The Ministers shall hold office during the pleasure of the President—Art. 75(2). The Council of Ministers (as at present constituted) consists of the Prime Minister and (1) Ministers who are members of the cabinet, (2) Ministers of State (Union Ministers) who are not members of the cabinet and Deputy Ministers.

Administrative Organisation. A Secretary to Government is the administrative head of a ministry and the principal adviser of the minister. When the volume of work in a ministry exceeds the manageable charge of the Secretary, one or more wings may be established under a Joint Secretary. A ministry is divided into divisions, branches and sections functioning under Deputy Secretaries, Under Secretaries and Section Officers respectively.

The Parliament. There shall be a Parliament for the Union, which shall consist of the President and two Houses, the Council of States (Rajya Sabha) and the House of the People (Lok Sabha)—Art 79.

The Council of States shall consist of not more than 238 elected representatives of States and Union Territories and 12 members to be nominated by the President (Art. 80). The House of the People shall consist of not more than 500 members chosen by direct election from territorial constituencies in States and not more than 25 members to represent Union Territories (Art. 81).

The Council of States shall not be subject to dissolution but as nearly as possible one-third of its members shall retire, as soon as may be, after the expiry of 2 years. The House of the People shall continue for 5 years (unless sooner dissolved) from the date of its first meeting and no longer and the expiry of the said period of five years shall operate as dissolution of the House (Art. 83). This mandatory provision of dissolution may be extended for a year due to emergency.

Parliamentary Committees. The following committees are appointed to assist the Parliament in its deliberations: 1. Public Accounts Committee, 2. Estimate Committee, 3. Public Undertakings Committee, 4. Committee on Government Assurances.

Separation of Powers. In a presidential system of government like that of the USA, the three branches of government—the Legislature, the Executive and the Judiciary—are independent units. But in a Parliamentary system like that of India the Executive is subordinate to the Legislature. The Judiciary alone functions as an independent branch.

Supreme Court of India. Chapter IV Part IV of the Constitution deals with judiciary. There shall be a Supreme Court of India, consisting of a Chief Justice of India, other Judges Art. 124(1). The parliament has the power to increase the number of judges.

A judge of the Supreme Court is to be appointed by the President after consultation with the Chief Justice of the Supreme Court and shall hold office until the age of sixty-five and can be removed from office by the

President, only after an address by each house of Parliament supported by more than two-thirds majority of members present and voting.

The Supreme Court has both original and appellate jurisdiction. The original jurisdiction is limited to questions between the Government of India and the States, or between the States inter se and to such other questions which involve "the existence or the extent of a legal right" (Art. 131). The Appellate Jurisdiction extends over all the High Courts in India (Art. 132).

The Attorney General. The President shall appoint a person who is qualified to be appointed as a judge of the Supreme Court, to advise the Government of India on legal matters (Art. 76). He has the right to speak and otherwise to take part in the proceedings of either House and to be a member of any Parliamentary Committee but is not entitled to vote (Art. 88).

The Comptroller General. There shall be a Comptroller and Auditor General of India who shall be appointed by the President. He shall only be removed from office in like manner and on the like grounds as a Judge of the Supreme Court (Art. 148)(1). He exercises a general control over the accounts of the Union and State Governments (Art. 149). He is not eligible for further office either of the Union or State governments, once he has retired [Art. 148(4)].

Election Commission is to supervise and control all matters relating to elections to the Parliament and State Assemblies and to the offices of the President and Vice-President (Art. 324). The Election Commission may consist of the Chief Election Commissioner and such other Election Commissioners as the President may appoint from time to time. When any other Election Commissioner is appointed, the Chief Election Commissioner shall function as the Chairman of the Election Commission. The Chief Election Commissioner cannot be removed from office except in the same manner and on the same grounds as a judge of the Supreme Court (Art. 324).

State Governments. The system of Government in States closely follows the pattern of the Union Government. The expression 'State' does not include the State of Jammu and Kashmir, unless otherwise indicated (Art. 152).

The Governor of a State is the Executive head of the State government (Arts. 155 and 156). He is assisted by a Council of Ministers, with the Chief Minister at the head (Art. 163). The Chief Minister is to be appointed by the Governor and other Ministers are to be appointed on the advice of the Chief Minister.

The Legislature of a State shall consist of the Governor and one or two houses of legislature, as the case may be (Art. 108). The following States have two Houses, the Legislative Council (Vidhan Parshad) and the Legislative Assembly (Vidhan Sabha); Bihar, Madhya Pradesh, Tamil Nadu, Maharashtra, Karnataka and UP. The Legislative Assembly of a State may consist of not more than 500 and not less than 60 members (Art. 170). The total number of members in the Legislative Council, if any, shall not exceed one-third of the total number of members in the Assembly (Art. 171).

There shall be a High Court for each State, consisting of a Chief Justice and such other judges as the President may appoint (Arts. 214 and 216). A judge of the High Court can be removed from office by the President, in the same manner as he may remove a judge of the Supreme Court (Art. 217). The High Courts have original jurisdiction in such matters as writs and appellate jurisdiction over all subordinate courts in their jurisdiction.

Advocate General. Every state shall have an Advocate General to advise the Government on legal matters (Art. 165).

Union Territories. The Union Territories ordinarily have no Council of Ministers or legislatures of their own. But the Parliament may *by law* create for any of the Union Territories of Goa, Daman & Diu, Pondicherry and Mizoram a body, whether elected or partly elected and partly nominated to function as a legislature for the Union Territory or a Council of Ministers or both (Art. 239A).

Official Language. Article 343 of the Constitution provides that the official language of the Union shall be Hindi in the Devanagari script and the form of numerals for official purposes, shall be the international form of Indian numerals; in other words, the Arabic numerals. English, which was originally to continue as the official language only upto Jan. 26, 1965, will under the Official Languages Act, 1963 continue to be used even after that date in addition to Hindi.

Admendment. Art. 368 deals with amendment of the Constitution. A Bill for Amendment must be passed in each House by a majority of the total membership of that House and by a majority of not less than two-thirds of the members present and voting.

Amendments to certain parts of the Constitution, however, require ratification of the Legislatures of not less than one-half of the States by resolutions to that effect.

Schedules. There are Ten Schedules to the Constitution, the ninth being added by the First Amendment to the Constitution in 1951 and the 10th by the 52nd Amendment in 1985.

First Schedule (under Articles 1 and 4) gives a list of the States and Territories comprising the Union.

States: 1. Andhra Pradesh, 2. Assam, 3. Bihar, 4. Gujarat, 5. Kerala, 6. Madhya Pradesh, 7. Tamil Nadu, 8. Maharashtra, 9. Karnataka, 10. Orissa, 11. Punjab, 12. Rajasthan, 13. Uttar Pradesh, 14. West Bengal, 15. Jammu and Kashmir, 16. Nagaland, 17. Haryana, 18. Himachal Pradesh, 19. Manipur, 20. Tripura, 21. Meghalaya, 22. Sikkin.

Union Territories: 1. Delhi, 2. Andaman and Nicobar Islands, 3. Laccadive, Minicoy and Amindivi Islands, 4. Dadra and Nagar Haveli, 5. Goa, Daman and Diu, 6. Pondicherry, 7. Chandigarh, 8. Mizoram, 9. Arunachal Pradesh.

Second Schedule under Arts. 59(3), 65(3), 75(6), 97, 125, 148(3), 158(3)] consists of 5 Parts A to E.

Part A fixes the remuneration and emoluments payable to the President and Governors. The following emoluments per mensem shall be paid to the President: Rs.10,000. Governor of State: Rs.5,500. The President and the Governors of the States shall also be paid such allowances as were payable respectively to the Governor General of India and the Governors of the corresponding provinces immediately before the commencement of this Constitution. ***Part B*** has been deleted by the Constitution (Seventh Amendment) Act of 1956. ***Part C*** contains provisions as to the Speaker and the Deputy Speaker of the House of the People and the Chairman and the Deputy Chairman of the Council of States and the Speaker of the Legislative Assembly and the Chairman and the Deputy Chairman of the Legislative Council. *Part D* contains provisions as to emoluments of the judges of the Supreme Court and of the High Courts. Chief Justice of the Supreme Court per mensem Rs.5,000. Any other judge of the Supreme Court per mensem Rs.4,000. Chief Justice of High Courts per mensem Rs.4,000. Any other judge of High Courts per mensem Rs.3,500. ***Part E*** contains provisions as to the Comptroller and Auditor General of India. Pay per mensem Rs.4,000.

Third Schedule (under Arts. 75(4), 99, 124(6), 148(2), 164(3), 188 and 219) contains forms of ***Oaths and Affirmations.***

Fourth Schedule [under Arts. 4(1) and 80(20)] allocates seats for each State and Union Territory, in the Council of States.

Fifth Schedule [under Art. 244(1) provides for the administration and control of Scheduled Areas. This schedule provides for amendment by a simple majority of Parliament and takes it out of the ambit of Art. 368 (Amendment of the Constitution).

Sixth Schedule [under Arts. 214(2) and 275(1)] provides for the administration of Tribal Areas in Assam, Meghalaya and Mizoram. This is a lengthy schedule which goes into the details of the administration in the Tribal Areas concerned. This schedule can also be amended by a simple majority of Parliament.

Seventh Schedule (under Art. 246) gives three Lists: *1. Union List* contains 97 subjects in which the Union government has exclusive authority. *2. State List* contains 66 subjects which are under the exclusive authority of State government. ***3. Concurrent List*** contains 47 subjects, where the Union and States have concurrent powers.

Eighth Schedule [under Arts. 344(1) and 351(1)] gives a list of 15 languages recognised by the Constitution: 1. Assamese, 2. Bengali, 3. Gujarati, 4. Hindi, 5. Kannada, 6. Kashmiri, 7. Malayalam, 8. Marathi, 9. Oriya, 10. Punjabi, 11. Sanskrit, 12. Sindhi, 13. Tamil, 14. Telugu, 15. Urdu.

Ninth Schedule [under Art. 31(B)] was added by the Constitution (First Amendment) Act 1951. It contains Acts and orders relating to land tenures, land tax, railways, industries, etc. passed by the State governments, and the Union government which are beyond the jurisdiction of civil courts.

The relevant Art. 31(B) reads as follows: "None of the Acts and Regulations specified in the Ninth Schedule, nor any of provisions thereof shall be deemed to be void or ever to have become void on the ground that such Act, Regulation or Provision is inconsistent with or takes away or abridges any of the rights conferred by any provisions of this part and notwithstanding any judgment, decree or order of any court or tribunal to the contrary, each of the said Acts and/or Regulations shall, subject to the power of any competent Legislature to repeal or amend it continue in force."

Tenth Schedule [under Articles 101, 102, 191 and 192) was added by the constitution (52nd Amendment) 1985. It contains the Anti-defection Act.

THE AMENDMENTS

With the Judges Salary Revision Act of 1986, the number of constitution Amendments has reached 54. As in the case of the American Constitution, some of the amendments have become better known than the constitutional provisos themselves. One of the peculiar features of the Indian Constitution is that various parts of it call for various processes of amendments.

The methods of amendment are three, according to the subject matter of the Article concerned. 1) Articles that may be amended by a simple majority of Parliament. These are mainly matters of detail like those provided in the Schedules. 2) Articles that may be amended by a two-thirds majority of both houses of Parliament. These are comparatively important matters. 3) Articles that require not only a two-thirds majority of Parliament but also ratification by at least one-half of the State Legislatures.

These are specifically mentioned. They are the following: Articles concerning the election of the President (Arts. 54 & 55), the powers of the Union Cabinet (Art. 73), the powers of State Cabinets (Art. 162), the High Courts in Union Territories (Art. 241), the establishment of the Supreme Court (Ch. IV, Part V), Constitution and powers of the High Courts (Ch. V, Part VI), Relations between the Union & State Legislatures (Ch. 1, Part XI), the Lists—Union List, State List and Concurrent List—in the Seventh Schedule, the representation of States in Parliament and the provisions of Article 368 itself (Part XX).

Procedure. Article 368 (Part XX) lays down the general procedure for Amendments. But Articles that require only a simple majority in Parliament do not fall in this category. Such Articles are indicated by a special clause attached to each of them which specifically excludes the operation of Art. 368 (see Art. 21, Sixth Schedule). Amendment of all other Articles comes within the scope of Art. 368.

Amendments. Starting with the First (Constitution) Amendment Act 1951 we have come down to the 52nd Amendment in 1985. This works out at an average of 1½ amendments per year. We give below a serial list of Amendments for all the years between 1951 and 1985.

1951: 1st Amendment; 1952: 2nd; 1954: 3rd; 1955: 4th and 5th; 1956: 6th and 7th; 1959: 8th; 1960: 9th; 1961: 10th and 11th; 1962: 12th, 13th and 14th; 1963: 15th and 16th; 1964: 17th; 1966: 18th, 19th and 20th; 1967: 21st; 1969: 22nd and 23rd; 1971: 24th, 25th, 26th and 27th; 1972: 28th, 29th and 30th; 1973: 31st and 32nd; 1974: 33rd, 34th and 35th; 1975: 36th, 37th, 38th and 39th; 1976: 40th, 41st and 42nd; 1977: 43rd; 1978: 44th; 1980: 45th; 1982: 46th; 1984: 47th, 48th, 49th, 50th 1985: 51st and 52nd. 1986: 53rd and 54th.

1. Constitution (First Amendment) Act, 1951. Besides making minor changes in Articles 15, 19, 85, 87, 174, 176, 341, 342, 372 and 375 this Act added two new Articles, 31-A and 31-B and a new Schedule, the 9th Schedule.

This amendment has permitted reasonable restrictions to be imposed by law on the exercise of the right of freedom of speech and expression in the interest of friendly relations with foreign States, or public order. It has also removed from the scope of judicial review, restrictions imposed on the right of citizens to carry on any trade, business, industry or service where such restrictions have been imposed with a view to enabling the State to undertake any scheme of nationalisation.

Another clause of the Amendment authorises the State to make special provision for the advancement of any socially and educationally backward class of citizens or for the Scheduled Castes and the Scheduled Tribes.

Two new Articles 31-A and 31-B were inserted. Article 31-A provides that no law providing for the acquisition by the State of any estate or of any rights therein or for the extinguishment or modification of any such rights shall be deemed to be void on the ground that it is inconsistent with, or takes away or abridges any of the rights conferred by any provision of this Part III.

Article 31-B provides that none of the Acts and Regulations specified in the Ninth Schedule nor any of the provisions thereof shall be deemed to be void, or even to have become void on the ground that such Act, Regulation or provision is inconsistent with, or takes away or abridges any of the rights conferred by any provisions of Part III and notwithstanding any judgement, decree or order of any court or tribunal to the contrary, each of the said Acts and regulations shall continue in force.

2. Constitution (Second Amendment) Act, 1952, amended Article 81 with a view to readjusting the scale of representation in the House of the People, necessitated by the completion of the 1951 census.

3. Constitution (Third Amendment) Act, 1954, substituted entry 33 of the Concurrent List in the 7th Schedule by a new one including foodstuffs, cattle fodder, raw cotton and jute as additional items whose production and supply can be controlled by the Central Govt. if found expedient in the public interest.

4. Constitution (Fourth Amendment) Act, 1955. The Amendment provides that when the State compulsorily acquires private property for a public purpose, the scale of compensation prescribed by the authorising legislation could not be called in question in a court. Another clause excludes the temporary taking over of a property by the State, either in public interest or to secure its better management, from the compensation clause. The amendment also operates as a saving clause for State monopolies. Seven new entries were also added to the 9th Schedule

5. Constitution (Fifth Amendment) Act, 1955, empowers the President to fix a time limit for State Legislatures to express their views on proposed Central laws affecting the area and boundaries etc. of their respective States.

6. Constitution (Sixth Amendment) Act, 1956, added a new entry to the Union List in the Seventh Schedule relating to taxes on the sale and purchase of goods in the course of Inter-State transactions.

7. Constitution (Seventh Amendment) Act, 1956. This act came into force on 1st Nov. 1956. It was passed for the reorganisation of the States. It involved not only the establishment of new States and alterations in State boundaries but also the abolition of the three categories of the States and the classification of certain areas as Union Territories. This led to the amendment of Article 1 and the First Schedule of the Constitution. Among the other important Articles which were affected by this amendment were Article 131 on the original jurisdiction of the Supreme Court, Article 168 providing for bicameral legislature in certain States and Articles 216, 217, 220 and 224 dealing with the High Courts. Two new Articles 340-A and 350-B were added with a view to implementing the recommendations of the States Reorganisation Commission regarding constitutional safeguards for linguistic minorities.

8. Constitution (Eighth Amendment) Act, 1959, extended the special provision relating to reservation of seats for the Scheduled Tribes and representation of Anglo-Indians in the House of the People and Legislative Assemblies of States, for a further period of ten years from Jan. 26, 1960.

9. Constitution (Ninth Amendment) Act, 1960, amended the first Schedule to the Constitution in order to give effect to the transfer of certain territories to Pakistan in pursuance of the agreements entered into between the Governments of India and Pakistan in Sept. 1958.

10. Constitution (Tenth Amendment) Act, 1961, incorporated former Portuguese enclaves of Dadra and Nagar Haveli within India and provided for their administration by the President.

11. Constitution (Eleventh Amendment) Act, 1961, obviated the necessity of a joint meeting of the two Houses of Parliament by forming them into an electoral college for the election of Vice-President. It also amended Art. 71 so as to make it clear that the election of the President or the Vice-President shall not be challenged on the ground of any vacancy, for whatever reason, in the appropriate electoral college.

12. Constitution (Twelfth Amendment) Act, 1962. The twelfth amendment was passed to include the territories of Goa, Daman and Diu as a Union Territory in the First Schedule to the Constitution and to empower the President to make regulations for the peace, progress and good government of these areas.

13. Constitution (Thirteenth Amendment) Act, 1962, created Nagaland as the sixteenth State in the Indian Union.

14. Constitution (Fourteenth Amendment) Act, 1962, conferred necessary legislative powers on Parliament to enact laws for the creation of Legislature and Council of Ministers in Union Territories. Former French establishments of Pondicherry, Karaikal, Mahe and Yanam were specified in the Constitution as the Union Territory of Pondicherry.

15. Constitution (Fifteenth Amendment) Act, 1963, was a minor amendment empowering the President of India, in consultation with the Chief Justice of India to make final decisions on the dispute about a High Court Judge's age. It also shortened the procedure for disciplinary action against State employees.

16. Constitution (Sixteenth Amendment) Act, 1963, empowered the State to enact any legislation, imposing reasonable restrictions on the exercise of fundamental rights by citizens, so as to protect the sovereignty and integrity of India.

It also amended the forms of oath, provided in the Third Schedule.

17. Constitution (Seventeenth Amendment) Act, 1964, provided that if the State acquires land under the personal cultivation of the owner and within the ceiling limit, compensation had to be paid at the market value of the property so acquired. The amendment also extended the protection of the 9th Schedule to 64 State land enactments.

18. Constitution (Eighteenth Amendment) Act, 1966, provided for the linguistic reorganisation of the Punjab into a Punjabi-speaking State called Punjab and a Hindi-speaking State called Haryana.

It further provided that the word 'state' in cls. (a) to (e) of Art. 3 includes a Union Territory and clarified that Parliament had the power to form a new State or Union Territory by combining any part of a State or Union Territory with any part of any other State or Territory.

19. Constitution (Nineteenth Amendment) Act, 1966, is a minor amendment clarifying the duties of the Election Commission.

20. Constitution (Twentieth Amendment) Act, 1966, validates the appointment of certain District Judges, irregularly appointed.

21. Constitution (Twenty-first Amendment) Act, 1967, provided for the inclusion of Sindhi in the Eighth Schedule to the Constitution.

22. Constitution (Twenty-second Amendment) Act, 1969, empowered Parliament to carve a new State (Meghalaya) out of Assam.

23. Constitution (Twenty-third Amendment) Act, 1969, provided for the extension of the reservation of seats for Scheduled Castes and Tribes and the nomination of members of the Anglo-Indian community for another 10 years.

24. Constitution (Twenty-fourth Amendment) Act, 1971, affirmed the Parliament's power to amend any part of the Constitution, including Fundamental Rights by amending Articles 368 and 13 of the Constitution. This neutralised the decision in Golaknath case.

A peculiar feature of the Amendment was that the President was bound to give his assent to amending Acts, when they were presented to him, thus making Presidential assent an automatic act.

25. Constitution (Twenty-fifth Amendment) Act, 1971, barred the jurisdiction of courts over acquisition laws in regard to the adequacy of the amount paid in lieu of take-over. The word "compensation" in the case of take-over was deleted and the word "amount" substituted.

A new clause provided that if any law was passed to give effect to the Directive Principles contained in clauses (b) and (c) of Article 39 and contained a declaration to that effect, it shall not be questioned on the ground that it takes away or abridges Fundamental Rights or on the ground that it does not give effect to the principles contained in the declaration.

26. Constitution (Twenty-sixth Amendment) Act, 1971. This Amendment withdrew the recognition given to former rulers of Princely States and abolished the privy purses granted to them.

27. Constitution (Twenty-seventh Amendment) Act, 1971. Under this Amendment two new Union Territories, Mizoram and Arunachal Pradesh, were set up.

28. Constitution (Twenty-eighth Amendment) Act, 1972. The Amendment deleted Article 314 of the Constitution, which gave protection to the ICS officers' conditions of service and privileges.

29. Constitution (Twenty-ninth Amendment) Act, 1972. This Amendment included the Kerala Land Reforms (Amendment) Act, 1969 and the Kerala Land Reforms (Amendment) Act, 1971, in the Ninth Schedule to the Constitution so as to protect these Acts from judicial review.

30. Constitution (Thirtieth Amendment) Act, 1972. This Amendment curtailed the number of appeals to the Supreme Court. Formerly appeals to the Supreme Court were decided on the basis of the valuation of the subject matter. The Amendment made only such cases which involve a substantial question of law, appealable to the Supreme Court.

31. Constitution (Thirty-first Amendment) Act, 1973, increased the upper limit of elective seats in the Lok Sabha from 525 to 545.

32. Constitution (Thirty-second Amendment) Act, 1973, implemented the 6-point programme for Andhra Pradesh.

33. Constitution (Thirty-third Amendment) Act, 1974, invalidated the acceptance of resignations by members of the State Legislatures and Parliament, which were made under duress or coercion, or any other kind of involuntary resignations.

34. Constitution (Thirty-fourth Amendment) Act, 1974, provided constitutional protection to 20 land reform Acts passed by the various States, by including them in the 9th Schedule to the Constitution.

35. Constitution (Thirty-fifth Amendment) Act, 1974, provided for Associate State status to Sikkim.

36. Constitution (Thirty-sixth Amendment) Act, 1975, made Sikkim a State of the Indian Union—the 22nd State, in fact.

37. Constitution (Thirty-seventh Amendment) Act, 1975, provided for a Legislative Assembly and a Council of Ministers for the Union Territory of Arunachal Pradesh.

38. Constitution (Thirty-eighth Amendment) Act, 1975, amended Arts. 113, 213, 289 B, 352, 356, 359 and 360 of the Constitution. It made the declaration of Emergency by the President and the promulgation of Ordinances by the President, Governors, and Administrative Heads of Union Territories non-justiciable (beyond the purview of the judiciary).

It laid down that the satisfaction of the President, Governor or Authority as to the necessity of immediate action shall be final and shall not be questioned by any court on any ground. It also entitled the President to issue different proclamations on different grounds.

39. Constitution (Thirty-ninth Amendment) Act, 1975, amended Arts. 71 and 329 of the Constitution and the Ninth Schedule. It placed the election of the President, Vice-President, Prime Minister and the Speaker beyond judicial scrutiny.

It provided for a new forum for the disposal of election questions relating to the incumbents of the four high offices—the President, Vice-President, Prime Minister and Speaker.

When a person has been appointed Prime Minister or chosen as a Speaker during the pendency of an election petition in respect of his (or her) election such petition shall abate. His (or her) election will remain valid, notwithstanding any law made by Parliament before the commencement of the Constitution (Thirty-ninth Amendment) Act, 1975 in so far as it relates to elections. Such elections shall not be deemed to be void or ever to have become void on any ground whatsoever.

40. Constitution (Fortieth Amendment) Act, 1976, amended Art. 297 and declared that "all land, minerals and other things of value underlying the ocean within the territorial waters or the continental shelf or the exclusive economic zone of India shall vest in the Union and shall be held for the purpose of the Union."

"The limits of the territorial waters, the continental shelf, the exclusive maritime zone or other maritime zones of India shall be such as may be specified from time to time by or under any law made by Parliament".

41. Constitution (Forty-first Amendment) Act, 1976, raised the retiring age of State Public Service Commission members from 60 to 62. This does not affect the members of the Union Public Service Commission who retire at the age of 65.

42. Constitution (Forty-second Amendment), Act, 1976, was passed by Parliament on November 2, and after having been ratified by half of the State Assemblies received Presidential assent on December 18, 1976. The Amending Act is a piece of comprehensive legislation containing 59 clauses and touching upon varied constitutional questions.

The main features of the Amending Act may be summarised as follows:

1. The Preamble has been altered from sovereign democratic republic' to 'sovereign socialist, secular democratic republic' and unity of the nation' into 'unity and integrity of he nation'.

2. The Directive Principles of the Constitution have been given precedence over Fundamental Rights, wherever they came nto conflict.

3. Similarly prevention or prohibition of anti-national activities takes precedence over Fundamental Rights.

4. Certain Fundamental Duties are laid down which have to be observed by all citizens. Non-compliance with or refusal to bserve the duties shall be punishable at aw. No court shall question the validity of uch actions.

5. Number of seats in the Lok Sabha and he State Assemblies which are based on population shall remain frozen as in the 1971 census till 2001 A.D., that is to say, for 2 more decennial Censuses.

6. The duration of the Lok Sabha and the State Assemblies is increased from 5 to 6 years.

7. The quorum for the Lok Sabha and the State Assemblies prescribed in the Constitution has been removed which means that a quorum is no longer a constitutional necessity.

8. The Parliament may decide what offices are offices of profit under the government or what amounts to corrupt practice in disqualifying an elected member from any house of legislature.

9. Rights and privileges of members and committees of legislatures are to be decided by the concerned houses from time to time.

10. Proclamation of Emergency may be made applicable to any part of the country (instead of the whole country). Similarly emergency can be lifted from any part of the country while it remains in force in other parts.

11. The duration of a Presidential proclamation taking over the government of a State shall be one year instead of six months.

12. The Union has the power to deploy armed forces to any State and to delimit cantonment areas in States. The State cannot exercise any power in the disposition of the armed forces or the administration of cantonment areas.

13.No court can question the competence of the Parliament to amend the constitution in any manner.

14. The Supreme Court alone can adjudicate on the validity of any Central law and the High Courts can adjudicate on the validity of the state laws. If the validity of any State law is dependent of the validity of any Central law or vice versa, then the Supreme Court can adjudicate on them. In any case, any decision on constitutional invalidity has to be made by a two-thirds majority of sitting judges where the number is not less than 5. If the number of judges is less than five the judgement has to be unanimous. It is also provided that the High courts have no power to make an interim order, where it will impede or obstruct any enquiry or action by the Government.

15. The President's liability to act in accordance with the advice of the Council of Ministers has been made practically mandatory.

43. Constn. (Forty-third Amendment) Act, 1977 which received Presidential assent on April 3, 1978 (i) omits some Articles added by the Forty-second Amendment and (ii) alters other Articles.

The omissions relate to articles that give unfettered authority to the Executive or eliminate or restrict the powers of the Supreme Court and High Courts. The alterations apply to Arts. 145, 226, 228 and 366.

All these omissions and alterations imply that the constitution has reverted to the position that prevailed before the passing of the Forty-second Amendment, at least in matters specifically referred to in the Amendment.

44. Constn. (Forty-fourth Amendment) Act, 1978 which received Presidential assent on April 30, 1979 brought in a number of changes. These apply to the following: Arts. 19, 22, 30, 31, 31A, 31C, 38, 71, 74, 77, 83, 103, 105, 123, 132, 133, 134A, 139A, 150, 165, 172, 192, 194, 213, 217, 226, 227, 239B, 257A, Chapter IV, Part XX, 329, 329A, 352, 356, 358, 359, 360, 361, 371F, Ninth Schedule and Forty-second Amendment Sections 18, 19, 21, 22, 31, 32, 34, 35, 56 and 59.

Of these Arts. 19, 31, 31A, 31C, 38, 77, 83, 105, 123, 132, 133, 134A, 139A, 150, 165, 194, 213, 217, 225, 226, 227, 239B, 257A, 329, 329A, 371F and Sections 18 to 59 of Forty-second Amendment itself are either omissions or deal with details or are comparatively unimportant. Others deserve notice.

Art. 22. This article deals with preventive detention. The important change is that preventive detention for a period of more than 2 months can be ordered only on the recommendation of an Advisory Board, whose Chairman shall be a judge of a High Court.

Art. 30. The Amendment of this article reads as follows:

In article 30 of the Constitution, after clause (1), the following clause shall be inserted, namely:-

"1A). In making any law providing for the compulsory acquisition of any property of an educational institution established and administered by a minority, referred to in clause (1), the State shall ensure that the amount fixed by or determined under such law for the acquisition of such property is such as would not restrict or abrogate the right guaranteed under that clause."

Art. 71. This Art. deals with questions relating to the election of President or Vice-President. The amended article reads:

"71 (1). All doubts and disputes arising out of or in connection with the elections of a President or Vice-President shall be inquired into and decided by the Supreme Court whose decision shall be final.

(2) If the election of a person as President or Vice-President is declared void by the Supreme Court, acts done by him in the exercise and performance of the powers and duties of the office of President or Vice-President, as the case may be, on or before the date of the decision of the Supreme Court shall not be invalidated by reason of that declaration.

(3) Subject to the provisions of this Constitution, Parliament may by law regulate any matter relating to or connected with the election of President or Vice-President.

(4) The election of a person as President or Vice-President shall not be called in question on the ground of the existence of any vacancy for whatever reason among the members of the electoral college electing him."

Art. 74 deals with the powers of the President vis-a-vis the Cabinet. The amended article is as follows:

In article 74 of the Constitution, in clause (1), the following proviso shall be inserted at the end, namely:—

"Provided that the President may require the Council of Ministers to reconsider such advice, either generally or otherwise, and the President shall act in accordance with the advice tendered after such reconsideration."

Art. 83 restores the old term of 5 years to the Lok Sabha.

Art. 103 relates to questions concerning the disqualification of a member of Parliament. This is now to be decided by the President after consultation with the Election Commission.

Art. 172 restores the 5-year term of State Legislatures.

Art. 192 relates to the disqualification of a member of a State Legislature. This is now to be decided by the Governor after consulta tion with the Election Commission.

Chapter IV Part XX is an addition. The amendment reads:

In Part XII of the Constitution, after Chapter III, the following Chapter shall be inserted, namely:—

Chapter IV—Right to Property.

300 A. "No person shall be deprived of his property save by authority of law".

Arts. 352, 356, 358, 359 and 360 deal with Emergency. An internal emergency can now be declared on "armed rebellion" breaking out and not for "internal disturbance". Other provisions relating to the emergency in Art. 356, 358, 359 and 360 have also been substantially altered.

Art. 361 restores protection to publications of proceedings of the Parliament and State Legislatures.

Ninth Schedule entries 87, 92 and 130 have been deleted.

45. Const. (Forty-fifth Amendment) Act, 1980, passed by Parliament on the 25th of January 1980.

Amended article 334 of the Constitution by substituting "thirty years" with "forty years".

This was to extend the safeguards in respect of reservation of seats in Parliament and State Assemblies for Scheduled Castes and Scheduled Tribes as well as for the Anglo-Indians for a period of 10 years, i.e., upto January 29, 1990.

46. The Constitution (Forty-sixth Amendment) Act, 1982—Article 269 was amended so that the tax levied on the consignment of goods in the course of inter-state trade or commerce shall be assigned to the states. This article was also amended to enable Parliament to formulate by law principles for determining when a consignment of goods takes place in the course of inter-state trade or commerce. A new entry 92B was also inserted in the Union List to enable the levy of tax on the consignment of goods where such consignment takes place in the course of inter-state trade or commerce.

47. The Constitution (Forty-seventh Amendment) Act, 1984—This amendment is intended to provide for the inclusion of certain land reform Acts in the Ninth Schedule to the Constitution with a view of obviating the scope of litigation hampering the implementation process of those acts.

48. The Constitution (Forty-eighth Amendment) Act, 1984—This was an amendment to Clause 5(q) article 356 of the Constitution for the continuation of President's rule in Punjab for another year.

49. The Constitution (Forty-ninth Amendment) Act, 1984—The Government of Tripura recommended that the provisions of the Sixth Schedule to the Constitution may be made applicable to the tribal areas of that state. The amendment involved in this Act is intended to give a constitutional security to the autonomous District Councils functioning in the state.

50. The Constitution (Fiftieth Amendment) Act, 1984—Article 33 was amended so as to bring within its ambit—

(i) the members of the Forces charged with the protection of property belonging to, or in the charge or possession of, the State; or

(ii) Persons employed in any bureau or other organization established by the State for purposes of intelligence or counter intelligence; or

(iii) Persons employed in, or in connection with, the telecommunication systems set up for the purposes of any Force, bureau or organisation.

51. The Constitution (Fifty-first Amendment) Act, 1985, replaces the section dealing with "Scheduled Castes and Scheduled Tribes except in tribal areas of Assam, Nagaland, Meghalaya, Arunachal Pradesh and Mizoram" with "the Scheduled Tribes except the Scheduled Tribes in the autonomous district of Assam"—in articles 330 and 332.

52. The Constitution (Fifty-second Amendment) Act, 1985. The amendment effected by a Bill popularly called Anti-Defection Bill, was to curb defection by disqualification. The following are the salient features of the Act:-

(1) A Member of Parliament or State Legislature belonging to any political party shall be disqualified for being a member of that House:

(a) if he has voluntarily given up his membership of such political party; or (b) if he votes or abstains from voting in such House contrary to any direction issued by the political party to which he belongs or by any person or authority authorized by it in this behalf without obtaining in either case, the prior permission of such political party, persons or authority, and such voting or abstention has not been condoned by such political party, person or authority within 15 days from the date of such voting or abstention.

(2) An elected member of a House who has been elected as such otherwise than as a candidate set up by any political party shall be disqualified for being a member of the House if he joins any political party after such elections.

(3) A nominated member of a House shall be qualified for being a member of the House if he joins any political party after the expiry of six months from the date on which he takes his seat after complying with the requirements of Articles 99 or, as the case may be. Article 188.

53. Constitution 53rd Amendments, 1986, Inserted a new article (371–G) conferring full statehood to Mizoram.

54. Constitution 54th Amendment, 1986, Amended part D of the 2nd schedule giving effect to the increases of salaries of the Chief Justice and Judges of Supreme Court and High Courts. An enabling provision for changes in the salaries of judges in future by Parliament by law, was made in Article 125 and 221.

POLITICAL PARTIES

The Party System in India has developed on lines quite dissimilar to those which obtain in Western democracies. The main trends noticeable in India are absence of polarisation or the lack of a powerful opposition, a cleavage of parties on national and state bases and endless proliferation.

The main reason why a polarisation of parties never took place in India was that the Indian National Congress had completely dominated the national scene. Besides, the Opposition itself had only a nominal existence in Parliament. In fact, till 1970, the Opposition leader was not even formally recognized. The first Opposition leader to be recognized as such, was Dr. Ram Subhag Singh, who was the leader of the Opposition Congress when the Congress split in 1970.

When the Janata Party came to power at the Centre in 1977 the Opposition Leader was given the status and rank of a Cabinet Minister. Y.B. Chavan was the first Opposition Leader to enjoy the status.‡

National & State Parties.

Instead of polarising at the national level into ruling and opposition parties, another sort of polarisation took place at national and state levels. Political parties soon came to be classified as national and state parties. The national parties function on an all-India basis. They are integrative in character and ideologically committed to some form of political philosophy. The state parties have no special ideology. They are usually centred round local leaders and are mainly interested in local questions. Many of these parties are communal in character.

The fortunes of national parties depend very much upon the degree of power that State parties wield in their respective States. But since national parties are better organised and have much greater financial resources, the chances of any State party getting the better of a national party, ultimately, are however rather remote.

Many are hard put to explain why political parties tend to multiply in India at such prodigious rates. During the 30 years that have elapsed, the country has seen a proliferation of political parties such as no other country in the world has witnessed. A rough tally yields a hundred political parties of varied hues and shades that have come into existence since independence.

No Regulation.

One explanation that has been offered is that the formation and functioning of political parties in India are not regulated by law.

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‡ The Opposition Leader is a fictitious personage in most of the new democracies. In 1964, out of the 113 states who were members of the UN only 30 had a recognised Opposition in Parliament. Since 1964 one-party states have become fashionable and Opposition Leaders as a class appear to be on their way out from history.

Of the 100 and odd parties scattered throughout the length and breadth of India, hardly a score deserves notice. The rest is made up of people, who cluster round displaced local leaders or hang on to sheer parochialisms, in the hope that their turn will come some day. Many of them come to life during election time and go into hibernation till the next election. But to the dismay of the voter, they never disappear altogether. They exist only to swell the number of candidates, cloud the issues, and spread confusion all round.

Recognition of Parties. Under the Election Symbols (Reservation & Allotment) order 1968, the Election Commission has the right to recognize political parties for allotment of symbols. Every candidate is allotted a symbol. If a candidate belongs to a political party the symbol is allotted to the party and the candidates use it on behalf of the party.

The symbol is important, a large number of voters being illiterate. They cannot identify the candidates (or the party) whom they support or would like to support by reading their names on the ballot paper or for that matter on placards or bill boards. The only thing that helps them to identify the candidates is the symbol. In fact they vote for the symbol rather than the candidate.

It is the duty of the Election Commission to allot symbols for the various parties and/ or the candidates whenever an election is announced. It is for this purpose that the Election Commission distinguishes between *recognized* and *unrecognized* parties. If a party is recognised, a particular symbol is 'reserved' for it. No other party or person can claim it or use it in the election campaign. Unrecognized parties, which include independent (unattached to any party) candidates, can always choose any symbol other than the reserved symbols.

The list of recognized parties is revised after every general election in the light of the votes polled by them. The general criterion for recognition is that a party should secure at least four per cent of the total votes cast in a State.

If any such political party is treated as a recognized political party in four or more States, it enjoys the status of a National Party throughout the whole of India. If recognized in less than four States, a party enjoys the status of a 'State Party' in the State or States in which it is a recognized political party.

Proliferation. When India became free there were only two political parties worth the name—the mammoth Indian National Congress and the diminutive Communist Party of India. With independence many new parties came on the scene. When the first elections were held (1951 Dec.—1952 Jan.) as many as 77 parties joined the fray.

The first important development was the breakup of the Communist Party in 1964 into two factions, right and left. The rightists retained the name and goodwill of the old Communist Party of India. The leftists formed a new party—the Communist Party (Marxist).

A more momentous development occurred in 1969. The monolithic Congress Party split into two—the party led by the Prime Minister Mrs. Indira Gandhi and the party led by the Congress president Nijalingappa. In the 1971 elections the Congress Party under Mrs. Gandhi won a massive majority in the Lok Sabha (350) while the party led by Nijalingappa made a poor show winning only a miserable 16 seats.

The most important development in party politics in 1974 was the formation of the *Bharatiya Lok Dal (BLD)* or the *People's Party of India* in August 1974 at Delhi. The new party was formed by the merger of seven existing parties, namely, *Bharatiya Kranti Dal (BKD), Swatantra, Samyukta Socialist Party, Utkal Congress, Kisan Mazdoor Party, Rashtriya Lok Tantric Dal and Punjab Khetibar Zamindar Sabha.*

United Front. In 1977 Mrs. Gandhi announced fresh elections to the Lok Sabha. The miniscule opposition parties got together to offer a united challenge to the dominating Congress Party. Under Jaya Prakash Narain's inspiring lead the Jana Sangh, the Opposition Congress, the BLD and the newly formed CFD (Congress for Democracy) under Jagjivan Ram came together as the *Janata Party* in May 1977 to offer a united front against the Congress led by Indira Gandhi.

The *Janata Party* won the elections gaining an absolute majority in the Lok Sabha, leaving only 135 seats for the Congress.

The Janata Party turned out to be a nine days wonder. Morarji Desai, the veteran Congress leader, was elected leader of the party. He took over the government as Prime Minister on March 24, 1977. The new ministry put up a big show going into action on many fronts. But the writing on the wall was clear to all who cared to look beneath the surface. The Janata Party had been weighed in the balance and found wanting.

The fault lay in the leaders themselves. Petty infighting kept on returning like the proverbial bad penny. These finally led to the resignation of the Home Minister Charan Singh from the party's national executive and the parliamentary board. The Prime Minister reacted by asking Charan Singh and Raj Narain, the Health Minister, to resign from the cabinet.

The peace-makers intervened. In January 1979, Charan Singh returned to the cabinet as Deputy Prime Minister and Minister for Finance. But Jagjivan Ram, another leader, was also elevated as Deputy Prime Minister at the same time. The patch-work did not last long.

Charan Singh and his followers refused to support Desai as Prime Minister. So he was obliged to resign Prime Ministership in July 1979. But he did not resign from the leadership of the party. In the circumstances Charan Singh formed a new party called Janata (Secular) or Janata (S) for short. Morarji at last resigned the leadership of the party and Jagjivan Ram succeeded him.

Charan Singh and his supporters formed a new ministry while Jagjivan Ram continued as the leader of the Opposition. Charan Singh, however, had to fall back on Mrs. Gandhi's party to maintain the requisite majority. Mrs. Gandhi withdrew her support on August 20, 1979 and the Charan Singh ministry fell.

Tables Turned. However, as Prime Minister he advised the President to dissolve the Parliament and order fresh elections. The President asked Charan Singh to continue in the meantime as Prime Minister of a care-taker government. In view of the coming elections, Charan Singh and Raj Narain formed a new party—Lok Dal. But the two leaders soon fell out. In the elections that followed Mrs. Gandhi came back to power as the leader of the Indian National Congress, more familiarly spoken of as Indira Congress or Congress (I).

In July 1981 the Election Commission recognized Congress (I) as the legitimate successor of the old Indian National Congress and de-recognized the Congress faction led by Devraj Urs (Congress (U)) as a national party. In August Jagjivan Ram replaced Devraj Urs as President and Congress (U) became Congress (J). Subsequently the Maharashtra leader Sharad Pawar became the President of the break-away Congress and Congress (J) transformed itself as Congress (S).

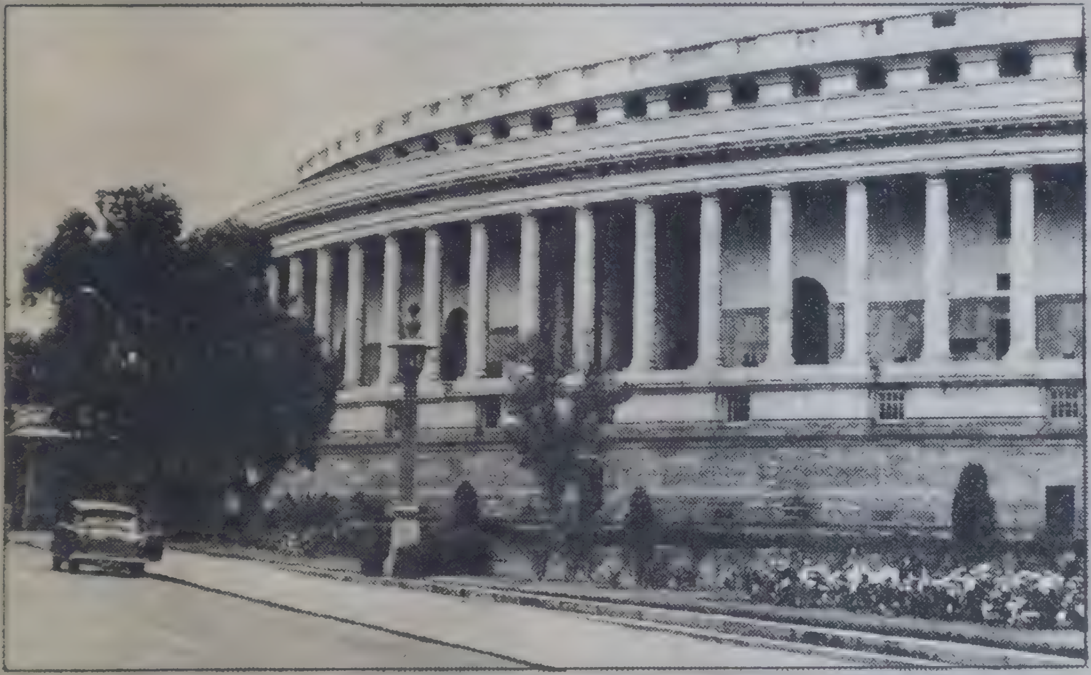
The Janata Party split up, the old Janata continuing with Chandrasekhar as President. The Lok Dal, the original splinter party started by Charan Singh, underwent many changes. It became Janata (K) after its President Karpoori Thakur, DMKP — Dalit Mazdour Kisan Party - under Charan Singh himself and finally returned to hold its old name Lok Dal on the eve of 1985 by-election. However, the major element in the old Janata Party, the Jana Sangh, gathered together under a new banner, the Bharatiya Janata Party, with A.B. Vajpayee as President. Meanwhile, a brand new party appeared on the horizon, the Democratic Socialist Party, with H.N. Bahuguna as President. Bahuguna became Vice President of Lok Dal in 1985.

ELECTIONS

The General Elections to the national Parliament and State Assemblies were held simultaneously till 1970. In 1971 this policy was given up. The national and State elections were 'de-linked' and held separately.

Although no explanation has been offered for this departure in policy, it was probably the clash of interests between national and state parties that prompted this change.

First General Election 1952. In the first general election held in 1952, fiftyone parties



Latest Party Position

As on 31st December 1986

	Lok Sabha	Rajya Sabha
Congress (I)	411	150
CPI (M)	22	13
ADMK	11	11
Janata	13	10
Telugu Desam	30	10
BJP	2	9
Lok Dal	2	8
CPI	6	4
DMK	2	3
Congress (S)	4	2
Akali Dal	7	2
Forward Block	2	2
AGP	7	2
National Conference	3	1
Muslim League	2	1
Kerala Congress	2	1
RSP	3	1
Janata (G)	--	1
Independent	11	5
Nominated	-	7
Vacant seat	4	0
From Bengal	-	1
Total	544	244

contested out of which 21 entered the Lok Sabha.

Second General Election 1957. At the second general election, the Congress secured 371 out of 494 elective seats in the Lok Sabha.

Third General Election 1962. Out of 494 parliamentary seats the Congress won 361.

Fourth General Election 1967. At the fourth general election, the performance of the Congress party was comparatively poor. It secured only 283 seats out of 520.

Fifth General Election 1971. This was a mid-term election, the Lok Sabha having been dissolved on Dec. 27, 1971, one year and two months before the expiry of the full period. The results of the elections were startling. The Ruling Congress, under Indira Gandhi, swept the polls and came out with a massive majority of 350 out of 518 elective seats in the Lok Sabha.

On the 26th of June 1975 the President declared an Emergency. This emergency was lifted only after the results of the Sixth General Election were announced, namely on the 22nd March, 1977.

During the emergency, the term of the Lok Sabha was extended to 6 years by the 42nd amendment. This extension was annulled by the 43rd amendment in 1977 and the old term of 5 years was restored.

Sixth General Election 1977. The 6th General Elections (March 1977) brought the Janata government to power. Janata won more than 296 seats in a total of 542—a clear majority—while the Congress could muster only 153 seats.

Seventh General Election 1980. The 7th General Elections (January 1980) returned Indira Gandhi to power again with a two-thirds majority in the Lok Sabha. The Congress (I) won 353 seats in a total of 542.

Seventh Lok Sabha
Party position as on March 1st, 1980

Congress (I)	353
Janata (S)	42
CPI(M)	36
Janata	31
DMK	16
Other parties	38
Unattached	12
Total	528
Vacant seats	16
Grand Total	544

Eighth General Election 1984. Polling was held on 24th, 27th and 28th December 1984 in 508 constituencies. In a landslide victory the ruling Congress(I) under Rajiv Gandhi secured 401 seats.

Elections to five Lok Sabha seats were countermaned—following the gas leakage tragedy in Bhopal and the death of candidates in the other four constituencies, viz., Srikakulam and Rajampet (A.P.) Chail (U.P.) and Madras North (Tamil Nadu).

Polling in these 5 constituencies was held on 28-1-1985. Congress (I) won in Chail and Bhopal, Telugu Desam in Srikakulam and Rajampet and DMK in Madras North.

State Elections. The normal term of a State Legislative Assembly is five years, from the date of appointment for its first meeting.* Election to every Legislative Assembly is direct and on the basis of adult suffrage.

The general elections to the State Assemblies, since independence, present a confused picture, primarily because new States and Territories have been created, and many territorial adjustments among the old and the new have been made.

As early as 1953, Andhra Pradesh was carved out in the south. This was followed by the large-scale reorganisation of States in November 1956. Next, the state of Bombay was bifurcated in May 1960 into Maharashtra and Gujarat. The latest reorganisation has come about as a result of the North Eastern Areas (Reorganisation) Act 1971. The North Eastern region of the country now has five States, namely, Assam, Nagaland, Meghalaya, Manipur and Tripura and two Union Territories, namely, Mizoram and Arunachal Pradesh.

Territorial reorganisation has led to consequential changes on the election scene. The composition of State Legislative Assemblies has altered, delimitation of assembly constituencies has been done afresh or readjusted wherever necessary and orders relating to Scheduled Castes and Scheduled Tribes have been modified.

Besides, mid-term elections in various States have added their own confusion. These elections come at odd times upsetting

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*The terms of State Assemblies were extended to 6 years by the 42nd Amendments. The 43rd Amendments restored the old period of 5 years.

Party Position in Lok Sabha & Rajya Sabha

As on 1st February 1985

	Lok Sabha	Cong (I)	Telugu Desam	CPI(M)	AIADMK	Janata	CPI	Other Parties	Un-attached	Total	Rajya Sabha
Andhra Pradesh	42	6	30	1	—	1	1	2[1]	1	42	18
Assam ★	14	—	—	—	—	—	—	—	—	—	7
Bihar	54	48	—	—	—	1	2	2[2]	1	54	22
Gujarat	26	24	—	—	—	1	—	1[3]	—	26	11
Haryana	10	10	—	—	—	—	—	—	—	10	5
Himachal Pradesh £	4	3	—	—	—	—	—	—	—	3	3
Jammu and Kashmir £	6	2	—	—	—	—	—	3[4]	—	5	4
Karnataka	28	24	—	—	—	4	—	—	—	28	12
Kerala	20	13	—	1	—	1	—	5[5]	—	20	9
Madhya Pradesh	40	40	—	—	—	—	—	—	—	40	16
Maharashtra	48	43	—	—	—	1	—	3[6]	1	48	19
Manipur	2	2	—	—	—	—	—	—	—	2	1
Meghalaya	2	2	—	—	—	—	—	—	—	2	1
Nagaland	1	1	—	—	—	—	—	—	—	1	1
Orissa	21	20	—	—	—	1	—	—	—	21	10
Punjab ★	13	—	—	—	—	—	—	—	—	—	7
Rajastan	25	25	—	—	—	—	—	—	—	25	10
Sikkim	1	—	—	—	—	—	—	—	1	1	1
Tamil Nadu	39	25	—	—	12	—	—	2[7]	—	39	18
Tripura	2	—	—	2	—	—	—	—	—	2	1
Uttar Pradesh	85	83	—	—	—		—	2[8]	—	85	34
West Bengal	42	16	—	18	—		3	5[9]	—	42	16
Union Territories						—					
Andaman and						—					
Nicobar Islands	1	1	—	—	—	—	—	—	—	1	1
Arunachal Pradesh	2	2	—	—	—	—	—	—	—	2	1
Chandigarh	1	1	—	—	—	—	—	—	—	1	—
Dadra & Nagar Haveli	1	—	—	—	—	—	—	—	1	1	—
Delhi	7	7	—	—	—	—	—	—	—	7	3
Goa, Daman and Diu	2	2	—	—	—	—	—	—	—	2	—
Lakshadweep	1	1	—	—	—	—	—	—	—	1	—
Mizoram	1	1	—	—	—		—	—	—	1	1
Pondicherry	1	1	—	—	—	—	—	—	—	1	1
Anglo-Indian (Nominated)	2	—	—	—	—		—	—	2	2	—
Nominated by President under section 80(1)(a) of the Constitution	—	—	—	—	—	—	—	—	—	—	12
Total	544	403	30	22	12	10	6	25	7	515	244
											(29 vacant)

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[1] BJP—1, Con (S)—1
[2] Con (J)—1; DMKP—1
[3] BJP—1
[4] NC(F)—3
[9] Forward Bloc—2; RSP—3
[5] Kerala Congress (J)—2, Indian Union Muslim League—2 Congress (S)—1
[6] Con (S)—2; PWP—1
[7] DMK—2
[8] DMKP—2

£ Ladakh in Jammu and Kashmir and parts of the Mandi Constituency in Himachal Pradesh, which were snow-bound could not have polling along with the rest.

★ Elections in Punjab and Assam could not be held since the situation in both States was not conducive the statutory pattern of general elections. Between the first general election in 1951-52 and the fifth general election in 1972, there have been as many as 20 mid-term elections in different States.

State General Elections

1st General Election		Dec. 1951-Jan. 1952
2nd	:	March 1957
3rd	:	Feb. 1962
4th	:	Feb. 1967
5th	:	Mar.-Apr. 1972

1972 Elections. Sixteen States and two Union Territories held elections in March and one Union Territory (Mizoram) in April, 1972.

Five states and five territories did not go to polls: (1) Kerala (2) Nagaland (3) Orissa (4) T. Nadu (5) UP (States); (1) A & N Islands (2) Lakshadweep (3) Chandigarh (4) D & N Haveli and (5) Arunachal Pradesh (Territories).

Winning Parties 1972

Andhra Pradesh—Ruling Congress (216 out of 287 seats)
Assam—R. Congress (94 out of 114)
Bihar—R.C. (167/318)
Gujarat—R.C. (139/198)
Haryana—R.C. (52/81)
Himachal Pradesh—R.C. (51/65)
Jammu & Kashmir—R.C. (51/65)
Karnataka—R.C. (165/216)
Madhya Pradesh—R.C. (220/296)
Maharashtra—R.C. (223/270)
Manipur—(Manipur People's Party 18, R.C. 17, seats out of 60)
Meghalaya—All pary Hill Leaders' Conference (32/60)
Punjab—R.C. (66/104)
Rajasthan—R.C. (145/184)
West Bengal—R.C. (216/280)
Delhi—R.C. (44/56)
Goa, Daman & Diu—Maharashtrawadi Gomantak Party (18/30)
Mizoram—Mizo Union (21/30)

Winning Parties 1977

March Election

Kerala—Ruling Front 111/140. The Ruling Front consisted of 7 parties. Leading Parties: National Congress(I)—38, Kerala Congress—20, CPI—23, Muslim League—13, and RSP (Kerala) 9.

June Election

Bihar—Janata 214/324
Haryana—Janata 75/90
Himachal Pradesh—Janata 53/68
Madhya Pradesh—Janata 230/320
Orissa—Janata 110/147
Punjab—Akali Dal 59/117
Rajasthan—Janata 150/200
Tamil Nadu—AIADMK 130/234
Uttar Pradesh—Janata 351/425
W. Bengal—CPM 178/254
Delhi—Janata 46/56
Goa, Daman & Diu—MGP 15, Congress 10/30
Pondicherry—AIADMK 14, Janata 7/30

Winning Parties 1978

Andhra Pradesh—Cong. (I) 175/294
Assam—Janata 53, Cong. (R) 26/126
Karnataka—Cong. (I) 150/224
Maharashtra—Janata 100, Cong. (R) 69/288
Meghalaya—Cong. (R) 20, APALC 16, HSPDP 14/60
Arunachal Pradesh—Janata 17/30.

Election 1982

Kerala

Total Seats	140
Congress (I)	20
CPI	13
CPM	26
Cong. (S)	7
Janata	4
Kerala Cong (M)	6
Kerala Cong (J)	8
AIML	4
IUML	14
RSP	4
Independents	34

West Bengal

Total Seats	294
Congress (I)	49
CPM	174
CPI	7
RSP	19
FBL	28
Independents & Others	17

Haryana

Total Seats	90
Congress (I)	36
Lok Dal	31
BJP	6

Janata	1
Independents & Others	12

Himachal Pradesh

Total Seats	68
Congress (I)	31
BJP	29
Janata	2
Independents	6

January 1983

Andhra Pradesh

Telugu Desam	201
Congress (I)	60
C.P.I.	4
C.P.I.(M)	5
B.J.P.	3
Janata	1
Congress (J)	1
Independents	18
Countermanded	1
Total seats	294

Karnataka

Janata-Ranga front including CPI 3 and CPI(M) (2)	101
Congress (I)	81
B.J.P.	18
Maharashtra Ekikaran Samity	5
A.I.A.D.M.K.	1
Others (including one C.P.I.(M) candidate who contested as an independent	17
Countermanded	1
Total seats	224

Tripura

C.P.I. (M)	37
R.S.P.	2
Congress (I)	12
Ind. (rebel Cong. (I))	3
TUJS*	6
Total seats	60

Delhi

Metropolitan Council

Total Seats	56
Congress (I)	34
BJP	19
Lok Dal	2
Janata	1

Municipal Corporation

Total seats	100
Seats declared	94
Congress (I)	55
BJP	34
Lok Dal (C)	3
Janata	1
Independent	1

Nagaland

Total seats	60
Congress (I)	36
N.N.D.P.	23
Independent	1

Assam

Total seats	126
Polling in	108
Congress (I)	89
Congress (S)	2
P.T.C.A.	3
CPM	3
CPI	1
Independents	10

Meghalaya

Total seats	60
Congress (I)	25
A.P.H.L.C.	16
H.S.P.D.P.	13
P.D.I.C.	1
Ind.	5

Jammu & Kashmir

Total seats	76
National Conference	47
Congress (I)	26
People's Conference	1
Panthers' Party	1
Independent	1

Tamil Nadu

Total seats	234
AIADMK	133
Congress (I)	62
DMK	22
CPI (M)	5
Janata	3
CPI	2
Gandhi Kamaraj National Congress	2
Indian Union Muslim League	2
Tamil Nadu Forward Bloc	1
All India Forward Bloc	1
Independent	1

Goa, Daman & Diu

Total seats	30
Congress (I)	18
M.G.P.	8
Goa Congress	1
Independents	3

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* Tripura Upajati Juba Samiti

Manipur

Total seats	60
Congress (I)	27
Independents	18
Janata	4
MPP	3
CPI	1
KNA	1
Others	6

Arunachal Pradesh

Total seats	30
Congress (I)	21
People's party of Arunachal Pradesh	4
BJP	1
Independents	4

March 1985

Andhra Pradesh: Total seats 294 (countermanded 2); —Telugu Desam: 202; Congress (I): 49; CPI: 11; CPI(M): 11; BJP: 8; Majlis 3; Janata 2; Ind: 6.

Orissa: Total seats: 147 (Countermanded 2):— Congress (I): 117; Janata: 20; CPI: 1; BJP: 1; SUCI 1; Jagrata Orissa 1; Ind:4.

Rajasthan: Total seats: 200; (Countermanded 2):— Congress (I): 113; BJP: 38; Janata: 10; CPI(M): 1; DMKP: 27; Ind:9.

Himachal Pradesh: Total seats: 68; (elections held for 65);— Congress (I): 55; BJP: 7; DMKP: 1; Ind: 2.

Maharashtra: Total seats: 288;— Congress (I): 162; Cong(S) 54; Janata: 20; BJP: 16; PWP: 13; CPI: 2; CPI(M): 2; Ind: 19.

Bihar: Total seats: 324; (Countermanded 5):— Congress (I): 192. DMKP: 38; Janata 11; BJP: 12; CPI: 12; JMM: 10; Cong.(S): 1; CPI(M): 1; Ind: 21.

Gujarat: Total seats: 182; —Congress (I): 149; Janata: 14; BJP: 11; Ind: 8.

Uttar Pradesh: Total seats: 425 (Countermanded 3); — Congress (I): 266; DMKP: 85; BJP: 16; CPI: 6; CPM: 2; Janata: 19; Cong.(S): 4; Ind: 24; Others: 71.

Karnataka: Total seats: 224; —Janata: 139; Congress (I) 66; CPI: 4; CPI(M): 2; BJP: 2; MES: 3; Ind: 8.

Madhya Pradesh: Total seats: 320; —Congress (I): 250; BJP: 58; Janata: 5; Congress (S): 1; Ind: 6.

Sikkim: Total seats: 32; —SSP: 30; Congress (I) 1; Ind: 1.

Pondicherry: Total seats: 30; —Congress (I): 15; AIADMK: 6; DMK: 5; Janata: 2; Ind: 2.

September 1985

Punjab

Total seats:	117
Seats declared	115 (election in two countermanded)
Akali Dal (L)	73
Congress (I)	32
BJP	4
CPI	1
Janata	1
Independents	4

Punjab: Lok Sabha

Total seats	13
Akali Dal (L)	7
Congress (I)	6

December 1985

Assam Assembly

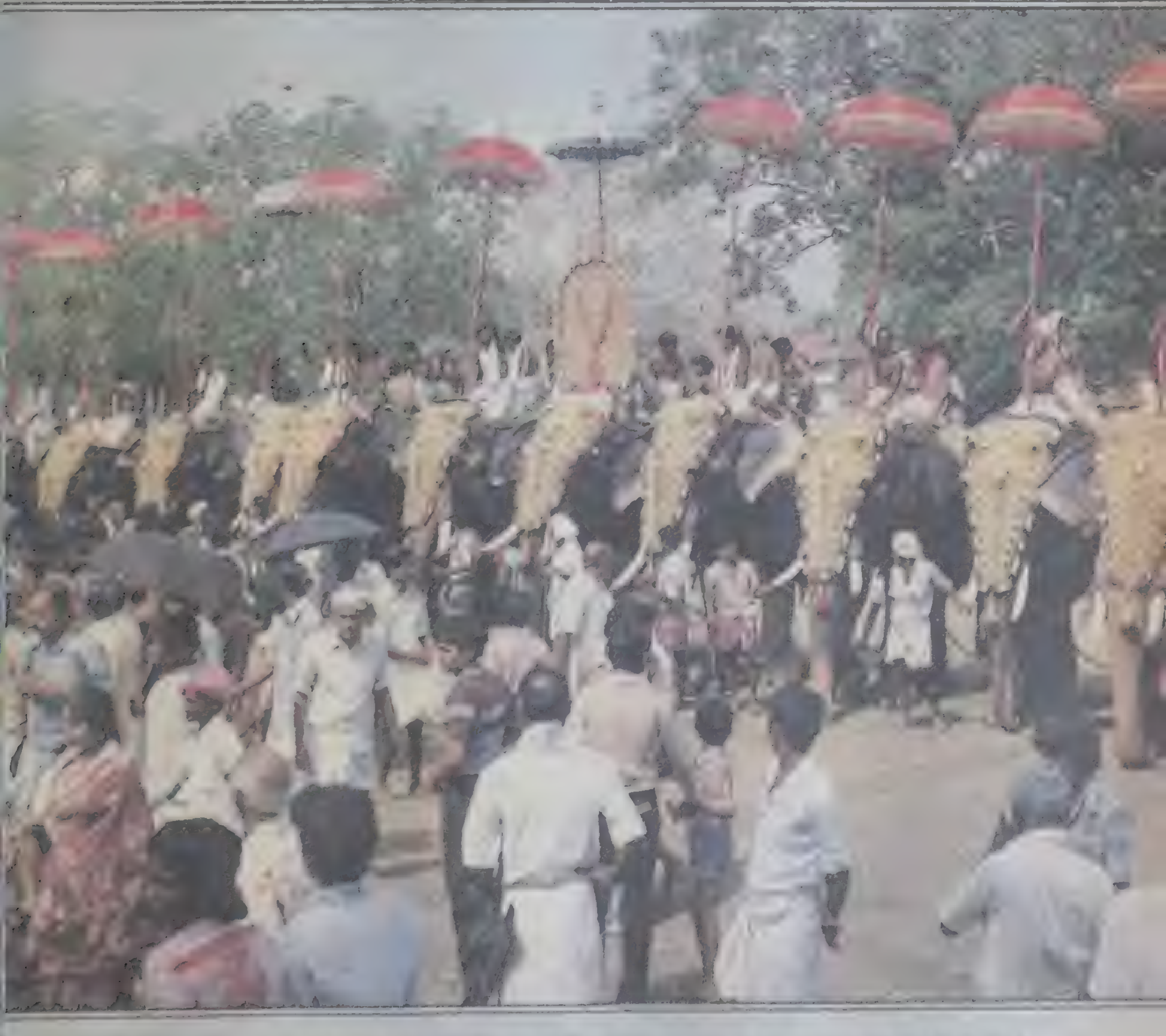
Total seats (excluding one countermanded)	125
Asom Gana Parishad (AGP)	64
Congress	25
United Minorities Front (UMF)	17
Congress (S)	4
CPM	2
Plains Tribals Council of Assam (PTCA)	3
Independents	10

Assam: Lok Sabha

Total seats	14
Asom Gana Parishad (AGP)	7
Congress	4
United Minorities Front (UMF)	1
Others	2

GLIMPSES OF INDIA

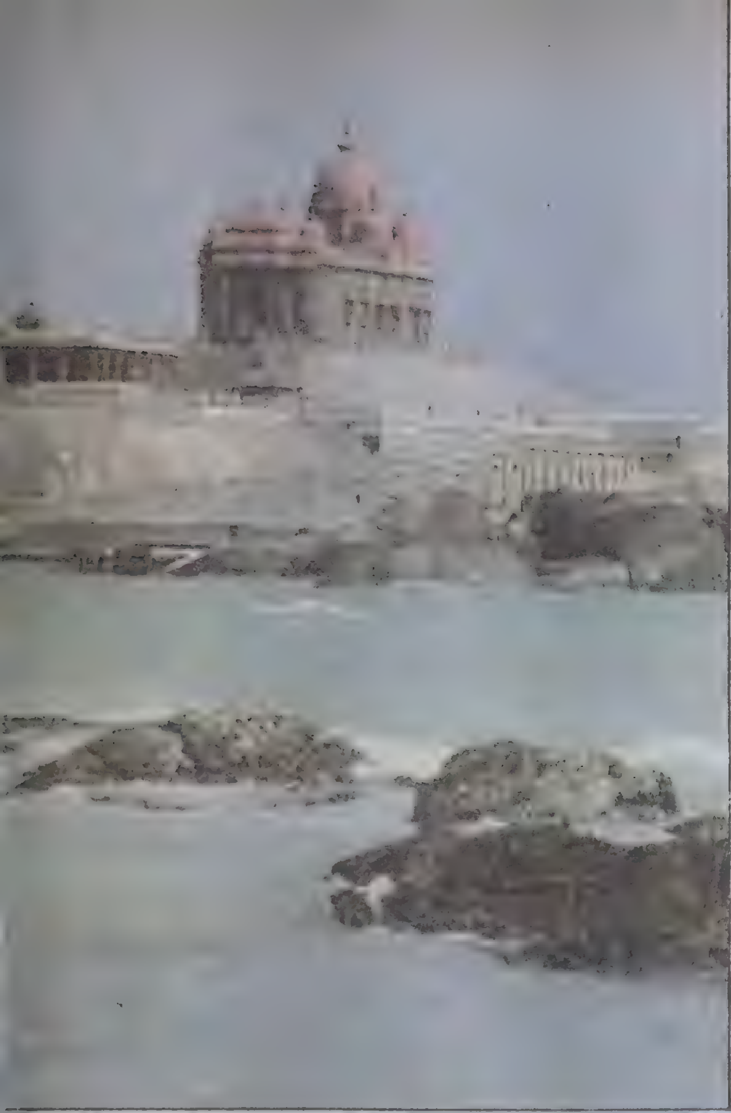
FROM KERALA TO KASHMIR



For lush green **Kerala**, POORAM in TRICHUR is a memorable event of colour and pageantry. Scores of caprizoned elephants sway their heads in tune to the beating of drums. The Pooram at Vadakkunnatha temple and its adjoining maidan is during April/May. Trichur can be reached by train. It is 70 km from the Cochin airport.

GLIMPSES OF INDIA

The golden height of PONMUDI, a hill station 1000 m above sea level, is 65 km from Trivandrum, **Kerala**. Away from the hussle and bustle of city, Ponmudi offers you misty mountains and aromatic tea gardens. Of course another unique feature of Kerala is her colourful BOAT RACES during the festival season of Onam in September.



Kanyakumari in **Tamil Nadu** is the Land's End of India. VIVEKANANDA MEMORIAL stands atop a rock rising out of the sea in the confluence of Indian Ocean, Arabian Sea and the Bay of Bengal. Railway's southernmost terminal at Kanyakumari. It is 89 km from the airport at Trivandrum. UDAGAMANDHALAM (OOTY), 2285 m above sea level, is a diadem of the Nilgris or Blue Mountains. It is connected by narrowgauge train. It is 83 km from Coimbatore airport.

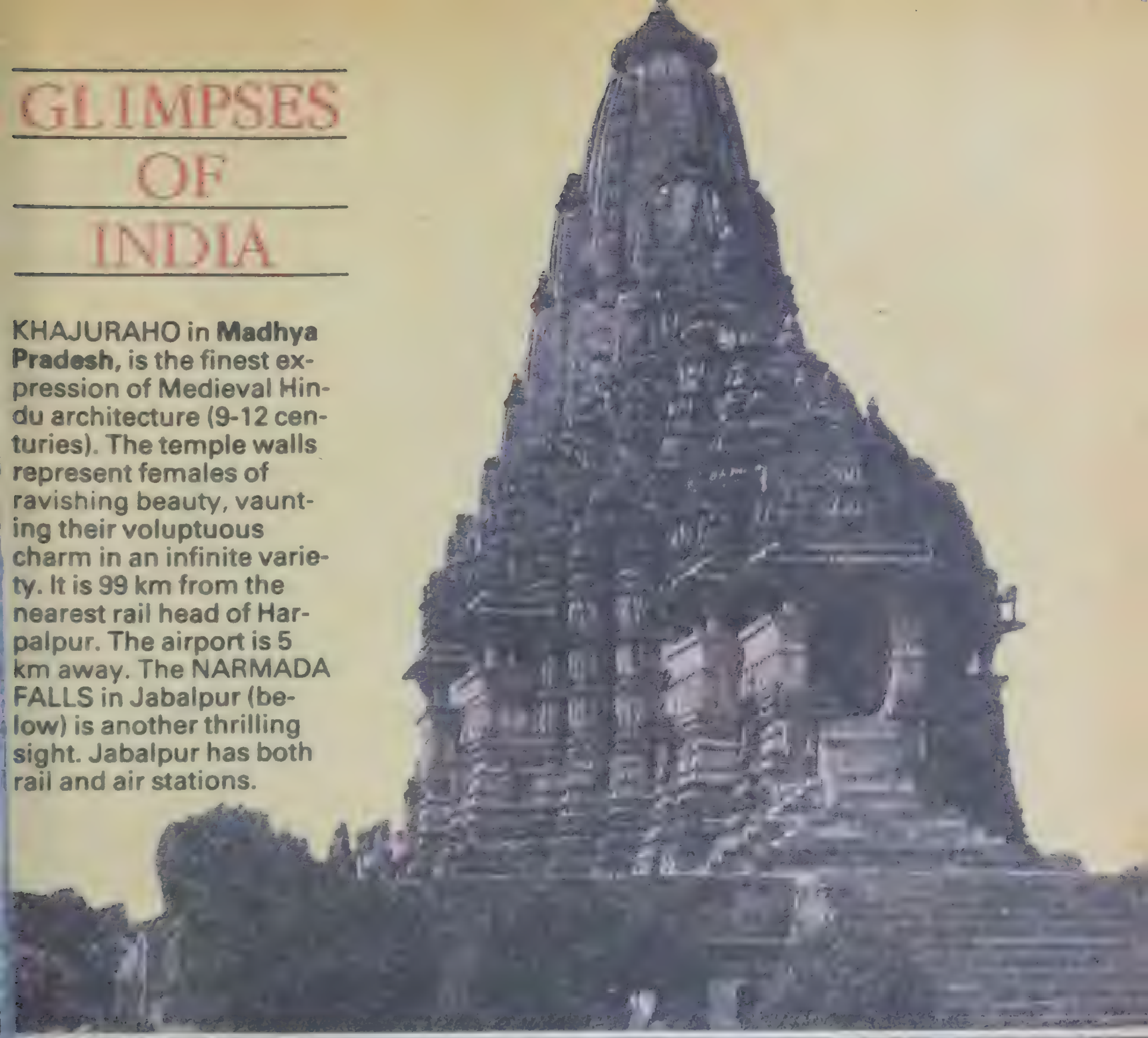
Karnataka's BRINDAVAN is one of the most beautiful gardens in the country, nurt
by man and natrue alike. Ninteen km from Mysore City, Brindavan is by the Krishn
Sagar Dam. It is a fantasy of terraced gardens, leaping fountains and colourful lig
Railway reaches Mysore City and it is 130 km form the nearest airport at Bangalo

GLIMPSES OF INDIA

Andhra Pradesh, the granary of the South, has her own charms. The state is full of historic monuments among which is CHARMINAR, built in 1591. NAGARJUNAKONDA, 150 km. from Hyderabad, on the Nagarjunasagar dam is a treasure house of Buddhist monuments of the 2nd century.

The lonely beaches of **Goa** are world famous. It provides a poetry of surf and sand. They are sandwitched and secluded between rocky hills backed by feathery palm and coconut trees. Goa is 656 km from Bombay. It has rail link. Panaji, the Capital is connected to Bombay and Trivandrum by air.

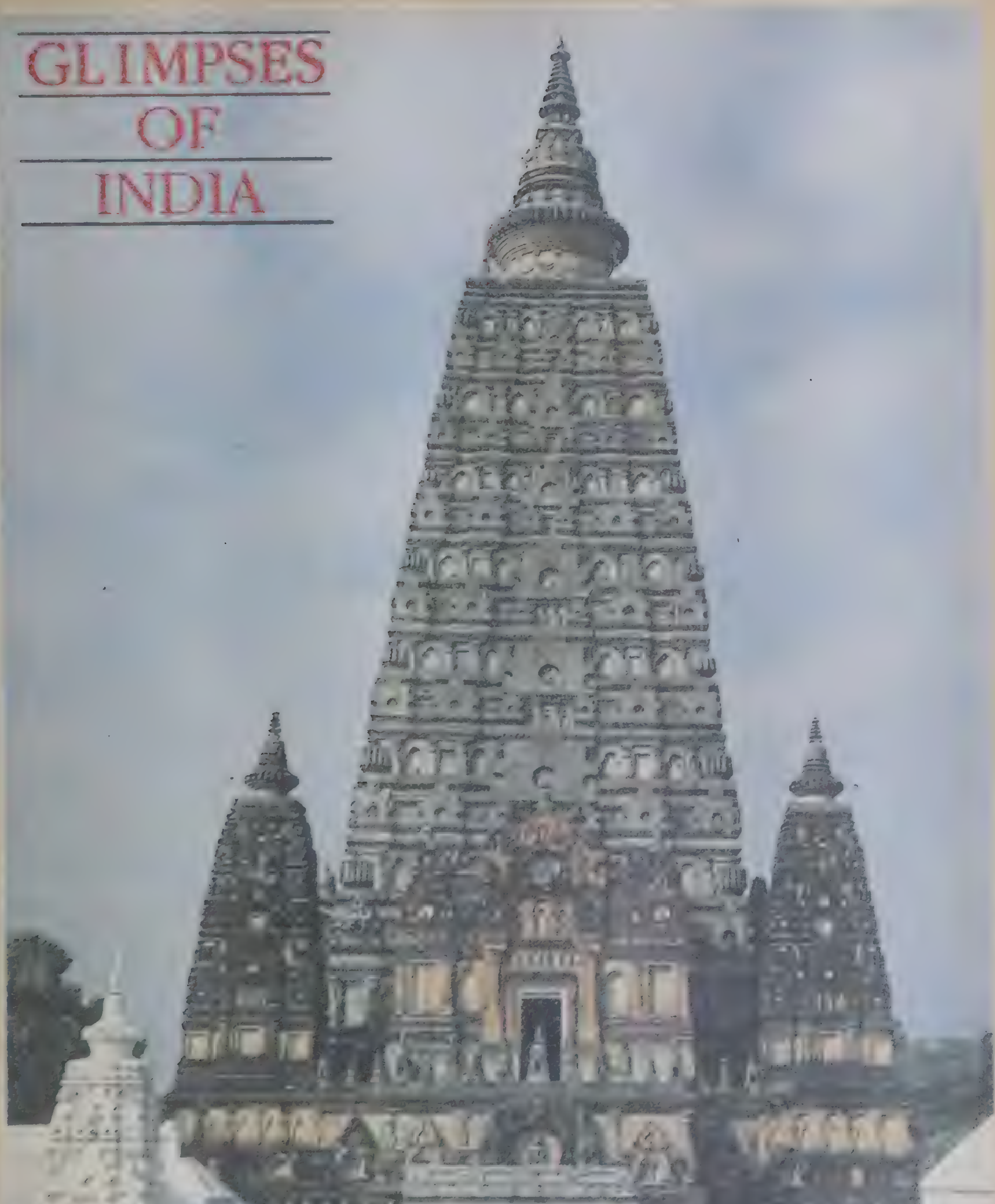
GLIMPSES OF INDIA



KHAJURAHO in **Madhya Pradesh**, is the finest expression of Medieval Hindu architecture (9-12 centuries). The temple walls represent females of ravishing beauty, vaunting their voluptuous charm in an infinite variety. It is 99 km from the nearest rail head of Harpalpur. The airport is 5 km away. The NARMADA FALLS in Jabalpur (below) is another thrilling sight. Jabalpur has both rail and air stations.

KONARK in **Orissa** is
abode of Surya, the S
God. The temple of
Konarak marks the p
cle of a great Kalinga
tradition in temple
architecture. It is 85
by road from Puri. a
head and 14 km fro
Bhubaneswar airpo
PURI, a city by the s
famours for its Rath
Yathra or Car Festiv
Bhubaneswar airpo
62 km away.

GLIMPSES OF INDIA



After a long and arduous quest Gautama Buddha came to BODHGAYA Bihar. Here under the Bodhi tree, with the river Nirayana flowing by, he attained enlightenment. The massive spire of the Mahabodhi temple is the greatest attraction to pilgrims. The nearest airport and railhed is Gaya, 11 km from Bodhgaya. Bodhgaya is 504 km from Calcutta and 188 km from Patna by road.

HAWA MAHAL in Jaipur, **Rajasthan,** is one of greatest symbols of Rajput glory. This 'Palace of Winds' with latticed screens is the central piece of attraction in the pink city. It is 308 km from Delhi and 241 km from Agra by rail. Has an ariport too. Nakki Lake (left) in MOUNT ABU Rajastan, is 1200 m above sea level. Abu Road rail station is 26 km away. Udaipur is the nearest airport.

GLIMPSES OF INDIA

The first sermon of Gautama, was preached in the Deer Park at SARNATH, Uttar Pradesh, where the Wheel of Law (Dharma) was set in motion. It is 1.6 km from its rail station and is 9.6 km by road from Varanasi. NAINITAL (Right), 1318 m above see level is a pituresque hill station. Railhead: Kathgodom, 35 km. Airport: Pantnagar, 70 km.

KALIMPONG, 1249 m above sea level, is on the northernmost tip of **West Bengal**. Like the famous Darjeeling nearby, it provides a glorious view of the snow-covered peaks of the Himalayas. Kalimpong is 77 km from the nearest railhead at Jalpaiguri. The nearest airport is Bagdogra, 77 km away.

GLIMPSES OF INDIA

KAZIRANGA National Park in **Assam** is the abode of the rare one horned Great Indian Rhinoceros. This Park is spread over an area of 430 sq. kms. Besides rhinos, it abounds in wild water buffaloes, Sambars, Swamp deers, hog deers, wild elephants, tigers and bears. It is also the breeding place of pelicans. Kaziranga is 220 km away from Guwahati on the NH 37. It can be reached from Calcutta either via Guwahati or Jorhat airports.

GLIMPSES OF INDIA

The Kalka-Simla small train takes you to the heart-string of **Himachal Pradesh**. SIMLA, 2204 m above sea level, is a terraced town mingling antiquity and modernity. Gives excellent view of snow-capped Himalayan ranges. The nearest airport is Chandigarh, 117 km away. MANALI, equally famous, lies in the valley of the Gods where there are mountainscapes, forest of pine and deodars, meadows and sparkling mountain streams. Nearest seasonal airport is Bhuntar, 10 km from Kulu and Kulu is 40 away. Can be reached by road either from Chandigarh or Pathnkot.

Delhi, the evergrowing capital city with an intermingling of historic splendour and modern majesty offers you the REDFORT, KUTABMINAR and the PARLIAMENT HOUSE.

Not too far away in **Punjab**, the GOLDEN TEMPLE of Amritsar beckons you for a day of prayer and obeisance.

GLIMPSE
OF
INDI

Reflections on a sun-set. Kashmir's DAL LAKE with its unspoilt loveliness, the Mug
gardens with their exotic charm and the towering hills with heavenly music, is
tourist's paradise. The summer hikes and winter sports make it a delight year arou
Travel upto Jammu by train and then take the road, meandering through lovely hi
Jammu has an airport with services connecting Srinagar.

DISCOVER INDIA, DISCOVER YOURSELF

Tourism in India is getting a big boost. It is the largest single foreign exchange earner for the country — Rs. 1300 crore in 1985. A record of 1.25 million tourists visited India in 1985 registering a growth of 5.5 per cent over 1984.

The enthusiasm generated by the "dramatic upsurge" (in the words of Minister of Tourism Mufti Mohammed Sayed) in tourist arrivals is such that the government has targeted 2.5 million tourists for 1995.

Domestic tourism also has been getting a big boost. "Discover India, Discover Yourself", "In India you will see the World" are the new slogans coined to launch a big campaign for the purpose.

Great Potential. Though never in the top league, India's vast and varied landscape has always been of interest to foreign tourists. The reportedly fantastic earnings available both directly and as spin-offs from the tourist trade to countries like Nepal, Sri Lanka, Taiwan, Thailand, Philippines, Indonesia, etc., has in the last decade and half persuaded the Government that this "industry" offered great potential to augment India's foreign exchange reserves.

The country earned Rs. 1,300 crore from the foreign tourist trade in 1985 and the figure, it is hoped, will go up to Rs. 7,000 crore by 1989-90. The Tourism Ministry is in high gear now, promoting domestic tourism on one hand and making a big push to recapture the enthusiasm of the early Seventies when ambitious targets for foreign tourist arrivals were set. For foreign tourists, the areas being stressed are adventure, mountain and wildlife tourism, special islands tourism packages, along with a range of schemes stressing budget packages, special charter fights etc.

New Steps. Among the new steps taken by the Government to foster tourism are:

Airlines offer up to 20 per cent discount in fares from the European markets. Hotels and tour operators in such destinations are to offer a discount of 25 per cent in tariff. Known as "affordable India scheme" it would be extended to Japan and the U.S.

All passengers travelling by Air India for destinations beyond the sub-continent will be given a package of free accommodation, meals, transfers and sight seeing during a 24-hour halt.

Assistance will be provided for a special study of tourism markets abroad.

Accommodation in tourist lodges is being expanded and, greater emphasis will be placed on diversification of tourism for those interested in mountaineering holidays and watching wildlife.

Island Resorts. One of the important areas of interest are the plans related to the promotion of tourism to the island territories—Andamans and Nicobar islands and Lakshadweep. In the Andaman and Nicobar islands, plans focus on the creation of the major tourist facility in Port Blair. This would involve a 1,000-bed hotel facility and a casino and duty free shopping area. From here tourists would be ferried daily to five or six smaller islands for water sports activities. In Lakshadweep, the idea is to have a week-long liner cruise out of Cochin in which tourists could go around some of the islands while being based in the liner itself.

Initial plans for the Andamans hope to generate a rate of 100 tourists a day for 180 days of the year. The number would be hiked by another 200 domestic tourists. The aim is to reach this target by 1988. According to one calculation made by the Tourism Ministry the island territory would earn something like Rs. 4.5 crore a year in foreign exchange with the traffic at this level. Domestic tourists, it is estimated, will spend another Rs. 3.6 crore additional tourists and more facilities would, it is estimated boost this.

Tourism Surges Amid Troubled Times

As seen through the eyes of the uninitiated, India is a land of teeming cities, beggars and snake charmers lurking cobras out of baskets with the sound of their gourd pipes as the sun sets over the Taj Mahal. The government wants to bring that simplistic vision into proper focus, and it seems to be succeeding.

Even though summers in India are suffocatingly sultry, luxury hotels in India's major cities were booked solid this August and airline reservations to the country were running higher than normal through October—when the tourist season is really supposed to begin.

Though about 1 million tourists are expected to visit India in 1986 (a 20 per cent increase over 1985), tourism promoters have had to work hard to quell fears about sectarian violence and less-than-luxurious living. Still, the combination of the government's well-publicized Festival of India that enchanted crowds in Britain, France and the United States in 1985 and the recent screenings of popular films like "Gandhi", "A Passage to India" and "The Jewel in the Crown" have created a surge of interest in India that has resulted in an unprecedented wave of visitors. "Taj and temples aside", says Rajan Jetley, managing director of the Indian Tourism Development Corporation, "We are tyring to project India as an unexplored territory."

In the past few years, however, the camera-laden variety of explorer has mostly stayed away. The murder of Prime Minister Indira Gandhi in October 1984 and the chemical gas disaster in Bhopal two months later tarnished India's appeal as a tourist spot. And for years the country has been saddled with a reputation not only for squalor but also for escalating religious and political strife. But many tourists, frightened away from Europe by the bloody terrorist attacks there and the fallout from the Chernobyl nuclear accident, have been heading for India instead.

Personalized Service: Prime Minister Rajiv Gandhi has taken a personal interest in promoting India, and with good reason the country could earn nearly $2 billion in valuable foreign exchange this year from tourism alone. The government is wooing visitors by promoting India's computerized hotel reservation systems and its personalized and relatively inexpensive service. "Sometimes it is so personalized, that the waiter might invite you to his house for a family ceremony," says a manager of Maurya Sheraton, a five-star hotel in New Delhi.

Bright side: India's tourism officials resolutely look at the bright side. By the end of the century, they predict, 10 million tourists will visit India each year and spend nearly $10 billion once they've arrived. A $1.5 billion, five-year tourism-development plan, now in the works, will lure those visitors with such attractions as hiking in the Himalayas, river rafting down the Ganges and holidays on the Andaman and Nicobar islands, which officials hope will become a beacon to duty-free shoppers.

A Disneyland-style amusement park is scheduled to be constructed near Delhi. And with the blessings of the Gandhi administration, planner hope to bring a few casinos into the country. The Taj Mahal? Oh, yes, that will still be there, too. *—NEWSWEEK*

In line with this, the Ministry has been pushing other departments of the Government to do thier bit for these plans. An important aspect of this is communications. At present, a ship journey takes nearly four days from either Calcutta or Madras and even these services are proving inadequate. The problem of inter island transportation is more daunting. The Tourism Ministry has proposed the immediate induction of a 1,200 passenger capacity ship, to be followed by another one by 1988. Similarly it has called for the augmentation of air facilities to the Islands. It has also proposed that the telecommunications to the Islands be revamped and augmented.

Ecology Endangered. The problem, however, and this is no secret among ecologists and anthropoligists, is that any great augmentation of tourism would have nothing but the most serious consequences for the islands. Their concern does not really stem from the proposition that 100 tourists a day wil ruin the paradise, but that this would be just a beginning and there are others who have even more grandiose plans for the islands.

At a seminar held in the CSIR, in New Delhi last year to identify the science and technology inputs for the long-term development of the islands, there was a severe shortage of ecologists, environmentalists and anthropologists (the last named to provide some input into one of the most precious assets of the islands — the aboriginal Jarawa and the Onge people, whose numbers are steadily declining)

In fact, the inputs came from people like a Regional Research Laboratory Director, who wanted an oil refinery to be set up on the Islands. Even more bizarre are plans taken seriously by many to create a "New" Hong Kong on the strategically situated islands, to attract the wealth and the people of Indian origin when the original reverts to China.

More Allocation. As against a provision of Rs. 187.46 crores is the Sixth Plan, an outlay of Rs. 326.16 crore has been provided in the current plan period of 1985-1990.

The annual report of the Department of Tourism for 1985-86 points out that the main thrust of the department of tourism's Seventh Five Year Plan is to vigorously promote domestic tourism as well as diversity overseas tourism to India. The diversification programme includes development of beach resort tourism, conventions and confetences, trekking and mountaineering, winter sports, wild life tourism and holiday tourism, etc. It may be mentioned that trekking, which is one of the major activities of youth tourists, requires little investment in infrastructure and benefits backward hill areas.

Travel on Rupee in U.K., Europe, U.S.

The Eurail, Britrail and Greyhound Ameripass are now available in Rupees. Travelling in America, Canada, Britain and 16 European countries will be more economical through these passes which were previously available only on the payment of foreign exchange.

The Travel Corporation of India (TCI), sole selling agents of these passes in India, have been authorised to accept the cost of the tickets (equivalent of US $210) in rupees. However, one can avail of the passes only on an excursion fare airline ticket.

The new system has been welcomed by passengers as it means an end to the cut of $200 from the FTS allowance of $500 and they can avail of several benefits like free ferry crossings, airport city transfers, free lake cruises, discounted Europe bus tickets for sightseeing and more.

A first class Eurail Pass costs $260 for 15 days and $680 for three months. The Eurail Youth Pass costs $290 and is valid for a month. The prices of the Britrail Passes are: $210 (eight-day first class), $420 (one-month first class) and $320 (second class).

The main issuing offices of these passes are situated in Delhi, Bombay, Bangalore, Calcutta and Madras. However, arrangements for passes can be made from anywhere in the country through TCI's network.

Special emphasis is being laid on creation

Foreign Travel Rules

- *All Indian nationals can undertake foreign travel either by obtaining a permit to that effect from the Reserve Bank blanket permit scheme or under one of the many schemes introduced by the Reserve Bank for the purpose including the well known FTS (Foreign Travel Scheme).*
- *A person wishing to travel abroad can apply to the Reserve Bank for a permit to do so stating the reasons of the travel and the number of days for which the permission is required. On approval, the Reserve Bank will release the exchange by issuing a permit which would state the name of the traveller, quantum of exchange, period of stay, countries to be visited.*
- *The entire exchange which is released should normally be drawn at one time by the traveller; of course this may not be possible in the case of blanket permits issued for export promotion or where a student is going abroad for studies and needs to draw the exchange periodically to meet his needs. Barring this, the Reserve Bank favours that the entire exchange permitted to be utilised be drawn at one time only.*
- *While drawing the exchange the traveller has to produce his passage ticket and also ensure that his journey does not commence later than 15 days after drawing the exchange. However, if he cancels his journey or postpones it beyond a month after purchasing the exchange, then it is necessary for him to either surrender the exchange to the authorised dealer or seek the approval of the Reserve Bank to retain the exchange for subsequent use.*
- *The foreign exchange which is released by the Reserve Bank is normally for a specific purpose, say, to meet the cost of attending a meeting with collaborators, etc. It is therefore necessary that the exchange be used for that purpose only and not for any other purpose.*
- *If the exchange cannot be used for the purpose for which it was released then the traveller should resell the exchange to the authorised dealer within a period of thirty days after coming to know that the exchange cannot be so used.*
- *The exchange which is released is for a specific period of stay. If this period is curtailed, then it is ncessary for the traveller to refund the proportionate amount of exchange by reselling it to the authorised dealer.*
- *Any saving made by a traveller out of the foreign exchange released to him should also be brought back to India and should not be used for buying articles for eventual import into India or for any other purpose.*
- *In terms of FERA, travellers are not permitted to remain outside India beyond the period specified by the Reserve Bank on the exchange permit or travel to any place outside India other than the countries specified thereon without the permission of the Reserve Bank.*
- *However, to meet the exigencies of business which may require short extended stay or visit to nearby countries not mentioned on the permit, the Reserve Bank ordinarily indicates on the permit that the traveller may spend an additional period of upto 15 days abroad on his own en route without any additional release of foreign exchange.*
- *The rupee funds for purchasing foreign exchange against travel permits should be provided by the traveller himself or by the sponsoring company in whose name the permit has been issued. Normally it is favoured that payments in excess of Rs. 10,000 should be received by debits to the permit holder's account maintained by the authorised dealer.*

of facilities for domestic tourists, especially budget tourists during the Seventh Plan period. The Bharatiya Yatri Ayas Vikas Samiti, a society set up by the department of tourism, has drawn up a programme for constructing 50 yatrikas at various pilgrim centres in the country. The yatrikas at Chitrakoot and Amaranta have already been completed and others at Brindavan, Bidar, Arai Al, Nandmehar and Puri are at different stages of construction.

Under another scheme, it is proposed to set up one yatri niwas in each State/Union territory. During 1985-86, the department has released funds for the construction of yatri niwases at Port Blair (Andaman and Nicobar islands), Goa and Kurukshetra (Haryana). Proposals for construction of yatri niwases at Satpada Chilka Lake (Orissa), Kanchipuram (Tamil Nadu), Allahabad, Patna, Hyderabad and Agartala (Tripura) are being processed.

Construction of tourist complexes at Fatehpur Sikri Sravasti and Kushinagar, improvement of Varanasi Ghats, development of Gautam Van at Bodhgaya, construction of Rasila stage on Goverdhanparikarma, improvement of facilities at Ajanta are some of the schemes intended to boost cultural tourism.

A master plan for conservation and improvement for Buddhist pilgrimage centres in Uttar Pradesh and Bihar is being prepared in collaboration with the archacological survey and two state governments.

The number of foreign tourists visiting India, excluding the nationals of Pakistan and Bangladesh, during the year 1985 was 836,908 as compared to 835,503 (revised) in 1984. The tourists from Pakistan and Bangladesh visiting India during 1985 were 422,476 as against 358,249 during 1984. Thus, the total number of foreign tourists was 12,59,384 during 1985 registering a growth of 5.5 per cent over 1984.

India Tourism Development Corporation (ITDC) has earned profit of Rs. 508 lakh in 1985-86 against Rs. 125 lakh in the previous year.

Some other relevant data on tourism development in India:

- On July 10, 1986, Government constituted a 12-member national committee on tourism. Chairman: Mohammed Yunus. Secretary: R. K. Puri (ITDC).
- The Union Government urged all State governments to declare tourism as an industry.
- Stress was given on construction of two-star and three-star rather than luxury hotels. Efforts were also on for the construction of yatrinivases and medium motels for the middle and poor class tourists.
- Proposed set up duty-free shops in the cities of Calcutta, Madras, Bombay and Delhi besides those already set up at selected airports.
- The department of tourism has decided to develop Goa, Kovalam, Madras-Mamallapuram, Puri-Konark and Andaman islands as major beach resorts.
- An outlay of Rs. 25.00 lakh has been provided for beach tourism for 1986-87.
- A convention complex with a seating capacity of 2000 is proposed to be constructed in Bangalore.

- **V.I.Ps in the field:** Minister of Tourism: Mufti Mohammed Sayed. Minister of State for Tourism: Santosh Mohan Dev. Secretary: Ministry of Tourism: S. K. Mishra. Director General of Tourism: N. K. Sengupta.

ECONOMY ON THE MOVE

The performance of the Indian economy has been on the whole satisfactory in spite of constraints like galloping population growth, growing trade-balances and industrial stagnation. There are signs that the liberalised economic policy introduced in 1985 has created conducive environment for competitive growth.

The estimated growth rate of real national income during 1985-86 was around four per cent, according to the annual report of the Reserve Bank of India. This was for the second year in succession that the rate remained below five per cent

The report for the year July 1, 1985, to June 30, 1986, added, however, that there were several sources of strength in the current economic situation which should help promote higher growth.

The report specified them as deceleration in inflation, sizeable stock of foodgrains, a high level of domestic savings and a reasonably comfortable level of foreign exchange reserves.

Pressures. Among the worrying features of the economy were inadequate industrial growth, trends in consumer prices and the pressures on the external payments position.

The performance of the agricultural sector during 1985-86 was affected by unfavourable weather conditions. Despite this, the overall foodgrain production during 1985-86 was placed in the range of 148 to 149.5 million tonnes, that is, about 2.3 million tonnes more than the 1984-85 level.

Sugarcane production at 175 million tonnes was only marginally higher than 173.6 million tonnes for the previous year and oilseeds production at 11.6 million tonnes was lower by 1.5 million tonnes produced in 1984-85.

Sufficient Food. During the current marketing year (October 1985 to June 30, 1986) the procurement of rice at 9.6 million tonnes was about the same as in the corresponding period in the previous year. The total procurement during the year might be the same as the previous year's record level or 9.8 million tonnes.

Wheat procurement during the 1986-87 marketing season was likely to touch a new high as procurement till June 30, 1986 at 10.41 million tonnes had already surpassed the previous season's (April-March) record purchase of 10.34 million tonnes.

Foodgrains stocks at the end of June, 1986 were estimated at around 28.6 million tonnes, comprising 19.1 million tonnes of wheat, 9.4 million tonnes of rice and 0.1 million tonnes of coarse grains.

There appeared to be some decline in the growth rate of industrial production in 1985-86.

Higher Growth. The deceleration was the sharpest in electricity where the growth rate in 1985-86 was 8.6 per cent as compared with 12 per cent in the previous year. In the manufacturing sector the growth rate at 6.1 per cent was higher than in the previous year.

The all-India average shortfall in supply of electricity as a proportion to demand went up to 7.9 per cent during the year as compared to 6.7 per cent in 1984-85.

The overall increase in the installed capacity of selected industries was of the order of 9.5 per cent in 1985-86 as compared to 7.9 per cent in the previous year.

An analysis of the phenomenon of build-up of inventories in some of the industries

Eleventh Poorest

India remains the 11th poorest country in the world with a per capita Gross National Product (GNP) of 260 dollars.

Given all the hazards of such cross-country comparisons, the World Development Report 1986 ranks India not only below China (per capita income 310 dollars) but also Pakistan (380 dollars) and even Sri Lanka (360 dollars).

Not only is the country's per capita income one of the lowest, but it is growing at a meagre annual rate of 1.6 per cent compared to China (4.5 per cent), Sri Lanka (2.9 per cent) and Pakistan (2.5 per cent).

The World Bank report also reveals that the annual rate of inflation in India has accelerated from an average 6.3 per cent during 1965-73 to 7.8 per cent during 1973-84.

For most of the seventies and early eighties, India's neighbours were, however, relatively more prone to inflationary pressures. Pakistan at 10.8 per cent and Sri Lanka at 14.9 per cent were far ahead of China whose inflation rate turned positive at 1.8 per cent.

Life expectancy at birth, which is simply the number of years a new-born infant can be expected to live, is placed at 56 years for India as compared to 70 years for Sri Lanka and 69 years for China, Pakistan is worse off at 51 years appeared to be warranted especially in the context of apprehensions in certain quarters that demand recession had hit some sections of the industry, the report said.

Bright. According to an unofficial assessment the overall picture of our economy is bright.

India's development over the last few years has revealed many remarkable features. First, from a food deficit, the country has emerged into a food surplus situation. Second, prices have been more or less stabilised and there are reasons to believe that inflation would be in check. In fact, the increase in the wholesale price index upto February 8, 1986 was 3.4 per cent as against 5.4 per cent in 1985-86 and the whole of this increase took place before August 1985. In the last six months prices have been stable.

Third, many industrial commodities like cement and fertilisers which were in short supply some time back are now available in abundance having achieved a growth rate exceeding 12 per cent a year. Fourth, the government has been able to secure high revenues from lower tax rates following better compliance, larger production etc.

Fifth, the functioning of infrastructure which had posed a problem in recent years has improved dramatically. In the first ten months of 1986-87 thermal power generation registered an increase of more than 15 per cent.

Railway freight had also recorded a commendable increase of 9 per cent in the first eight months of 1986 year which is double the annual average rate of growth during the Sixth Plan. Despatches of coal increased by 10 per cent in the first eight months. Finally, it is also noteworthy that the high savings rate has made it possible to finance Plan outlays without depending too much on external aid or commercial borrowing. The saving rate is around 24 per cent, which, for a developing country, is not unsatisfcatory.

National Income, Per Capita Income

India's national income in 1984-85 was Rs. 173207 crore and per capita national income Rs. 771.5.

These are at current prices. At 1970-71 prices the national income was Rs. 57014 crore and per capita income Rs. 2344.

National income is defined as the sum of incomes accruing to the factors of production supplied by normal residents of the country before deduction of direct taxes. It is identically equal to net national product at factor cost.

For 1984-85 period, Delhi recorded the highest per capita income among different States and Union Territories at Rs. 4195, nearly 79 per cent higher than the national average. Bihar stood with the lowest figure of Rs. 1385. Here is a list:

Delhi	4195
Punjab	3835
Goa, Daman, Diu	3811
Pondicherry	3777
Haryana	3296
Maharashtra	3232
Gujarat	2997
West Bengal	2485
Kerala	2196
Jammu & Kashmir	2075
Tamil Nadu	2070
Manipur	2062
Karnataka	2047
Andhra Pradesh	1996
Rajasthan	1838
Assam	1821
Uttar Pradesh	1764
Meghalaya	1727
Madhya Pradesh	1716
Orissa	1534
Bihar	1385

Agriculture Strong. The recent increase in foodgrains production from 129.6 million tonnes to 150 million tonnes suggest the growing strength of the agricultural sector. What is important is that Indian agriculture is no longer heavily dependent on the vagaries of weather.

The spread of irrigation facilities has imparted a degree of security to the farmers. Emphasis has been laid on expeditious implementation of the agriculture development strategy encompassing extension of high yielding varieties programme, larger consumption of fertilisers, expansion of irrigation, provision of larger, credit to farmers etc.

However, Indian agriculture has yet to

derive the benefits of new technologies for production, storage, packing etc. Genetic engineering can transform agriculture in dry and saline areas. New storage and packing techniques can save considerable waste. These technologies will simultaneously help correct regional imbalances as also inter-crop imbalances.

The performance of industry during the year and the outlook for the future are encouraging. Industrial production during April to November 1985-86 was up by around 8 per cent. Impressive rates of growth have been achieved in fertilisers, steel, cars and jeeps, commercial vehicles, scooters and mopeds, petroleum refinery products and so on.

Growth Rate. The 7 to 8 per cent growth rate is far below our requirement or performance of some other countries like Korea. It is precisely for this reason that government has, particularly in the last one year, adopted an unorthodox approach. The system is gradually being unwound by liberalisation of controls and regulations. The object behind this liberalisation is to stimulate competition which, at one time, was severely smoothered. With competition we expect to have greater efficiency in technology, in management and consequently, reduction in costs and prices.

The policy changes which have been brought about include:

Delicensing of certain industries: raising of asset limit for MRTP companies; exemption of MRTP companies from seeking prior approval of Company Law Board for new projects or expansion; broadbanding; restrictions on capacity expansion have been eased; import policy with a longer time frame, raising investment limit of small and ancillary units; incometax rationalisation and reduction; and introduction of value added tax in the form of MODVAT.

Good Response. Industry has responded well to the new opportunities and challenges. For instance, 1272 letters of intent were issued in the first 10 months of 1985, higher by 40 per cent over the same period last year. The number of industrial licences issued during this period had been 1925 which is higher by over 15 per cent over the same period last year. Foreign collaborations have increased from 576 in the first nine months of 1984 to 687 this year. Tax receipt after the tax cut have shot up by 23 per cent in 1985-86.

By the end of December 1985, about 1196 registrations had taken place in the 25 broad industry groups delicensed totalling approximately Rs. 4000 crore. About 52 per cent of these registrations were in Centrally declared backward areas. The principal industries where investment was directed included electronic components, industrial and medical gases, steel structurals, automobile components, metallurgical machinery and industrial machinery. Seventeen MRTP and 27 non-MRTP companies have availed of the broad-banding facility by end December 1985.

Mostly, these companies were in areas such as automobile, earth moving equipment and synthetic yarn and fabrics. MRTP companies in industries exempted from Sections 21 and 22 of the MRTP Act also invested more especially in inorganic fertilisers, oil field services, electronic components and automotive components — the total new investment being of the order of Rs. 2889 crore.

Competitive. Though the recent initiatives in policies have created conducive environment for competitive growth, some additional steps will further improve the overall climate. Licensing continues to be a bottleneck. In many instances, there are delays of as much as two years in obtaining of clearances. To rectify the situation, there are three suggestions from the entrepreneurs. First, as many areas as possible should be delicensed. The process can be started with industries where there is large gap in demand and supply, whose products are on OGL, which are export oriented and those which do not entail any net outflow of foreign exchange.

Besides, to reduce the delays in areas where licensing is resorted to certain time limits of, say, three months should be adhered to after which, the project should be presumed to have been cleared by the authorities. Third, the facility of broad-banding should be extended to more industries. Although, the asset limit for MRTP companies has been raised to Rs. 100 crores, it continues to lead to delays and restrict new

A Good Year: A Review

Dr. Malcolm Adiseshiah

The year 1986-87 should on the whole be a good year but what it means for employment and poverty alleviation will depend on structural changes and the use of the huge foodgrains reserve.

It is envisaged that the overall growth of the economy to be between 5 and 5.5 per cent.

Agriculture which recorded zero growth in 1985-86, is expected to show a six per cent growth. Similarly, the manufacturing sector which recorded a poor 6.3 per cent in 1985-86 will record 7.9 per cent, while infrastructure industries are expected to show a 10 to 12 per cent growth rate. Savings and investments will continue at 24 per cent.

There are two areas where we expect a squeeze. One is the inflation rate which will be much higher at 8.9 per cent and the other is foreign trade and the balance of payments position. The remedy suggested: large firms should enter the export field and imports should be replaced by domestic production in eight to 10 selected itmes.

A situation has arisen where, revenue receipts are not available for financing Plan expenditure. The financing of the Plan has now nothing to do with tax collections and receipts as the balance from current revenue which till the Sixth Plan had been positive has now become zero. The dependence on foreign savings is projected to rise from 1.2 per cent of GDP in 1985-86 to 1.5 per cent in 1989-90.

If the GDP increases annually between five and 5.5 per cent, the absolute amount borrowed will increase sizeably. Similarly, the domestic borrowings and budgetary deficit will in absolute terms be larger in the Seventh Plan than the Sixth.

Another disquieting feature is public debt. The volume of public debt has risen from Rs. 2022 crore in 1951 to Rs. 58,537 crore in 1985 and to Rs. 80,642 crore in 1986. The rise has been faster in the last seven years. As a consequence, there is a steep increase in interest liability which for the current year is Rs. 4,745 crore. If to this is added interest on Provident Fund, reserve funds, small savings, etc. the interest burden will total Rs. 8,174 crore — 28 per cent of the total revenue receipts.

Another disquieting aspect relates to the use to which it is put. Till recently borrowed money was used only for creating assets. But now the galloping public debt is financing the consumption expenditure of the Government. Further, the Reserve Bank, taking up loans which others do not touch, simply fuels inflation which public borrowings is supposed to dampen.

What adds to the situation is that public sector enterprises which were meant to provide resources to the Government have become a drain on it and a part of the massive borrowings is to fund their losses. The only way to cut the alarming increase in public debt, according to the review, is to reduce unproductive Government expenditure and for the public sector to pay its way and generate resources.

It is encouraging that net domestic savings as percentage of net national product has been rising. Savings which were 16.8 per cent of GDP and 12.1 per cent of NNP in 1970-71 have risen to 23.4 per cent and 17.2 per cent respectively in 1985-86. The net household saving has maintained its dominant position in 1983-84 and 1985-86 but in 1985-86 the savings of the household sector dropped in financial terms by Rs. 1,454 crore due to lower savings in the form of currency holding which itself was the result of reduced rate of currency expansion.

Now the question why the growth rate of the economy is low while the savings rate is high: K. N. Raj committee on savings and a study by the Indian Institute of Public Administration have already shown that the real rate of savings is not high

- *Dr. Malcolm Adiseshiah, former Director-General of UNESCO is an internationally known expert on economics and education. Excerpts from a review he presented in a seminar at the India International Centre, New Delhi.*

investment through the clauses on 'inter-connection' and 'associated persons'. They need to be made more realistic as in other countries.

Calcutta, the Costliest

Calcutta is the costliest city in India and Shimla the cheapest.

An analysis of the consumer price index (CPI) provided by the Central Statistical Organisation for urban non-manual employees shows that the average annual rate of inflation based on CPI in different cities for the 12-month period till August 1986 was 7.5 per cent.

But the rate of inflation was the highest in Calcutta at 9.8 per cent followed by Madras at 9.3 per cent. Delhi recorded 7.3 per cent increase and Bombay 6.9 per cent.

Cities with a population of more than a million showed wide variations in inflation rates. In Jaipur, the rate was 11.5 per cent, followed by Hyderabad at 11.3 per cent and Bangalore 11.2 per cent.

The lowest rate of inflation was recorded by Shimla at 3 per cent, followed by Shillong at 4.2 per cent and Chandigarh 4.4 per cent.

The CSO figures also show that the Rupee in August 1986 was worth only 16.31 paise compared to the 1960 level. The value of the Rupee in Madras sank to 15.60 paise, while in Bombay it was 16.45 paise and Delhi 16.56 paise.

Though the rate of inflation was the highest in Calcutta, the Rupee value was also the highest at 18.98 paise in August.

The highest erosion in the value of the Rupee has been at Jaipur (Rajasthan) where it touched the nadir of 14.47 paise, followed by Shillong at 14.49 paise and Gulbarga at 14.4 paise. In Trivandrum, the Rupee was worth 14.4 paise.

Among the cities with a population of more than a million the erosion of the Rupee value was marked in Bhopal where it was worth only 15.17 paise. Patna at 15.29 paise, Hyderabad at 15.43 paise and Srinagar at 15.87 paise.

One important factor which has been instrumental in raising cost of production and depressing productivity, is the disturbed labour situation. For better industrial harmony, wages ought to be productivity linked, labour laws in regard to bonus, strikes etc. should be strictly observed and Government should not encourage by-passing of these. Labour discipline cannot be maintained if this indiscipline is protected particularly with regard to go-slow tactics followed by labour.

Federal Structure. The Indian financial system has gradually evolved on federal lines. Before 1871, the Central Government had complete control over provincial revenues and expenditure. All the revenues were credited to the Central Government and the Central Government made fixed grants to the provinces to meet their expenses.

Under the Government of India Act 1919, a complete separation between Central and Provincial heads of revenue was made. Income tax and Central stamps were assigned to the Centre and Excise, Judicial stamps, Land Revenue and Irrigation were made over to the Provinces.

Under the Government of India Act 1935, income tax (excepting Agricultural Income tax) was to be collected by the Centre and a percentage of the net proceeds was to be distributed among the provinces.

Source of Revenue. The main source of Union Revenue is customs and excise duties levied by the Union Government, corporation tax and income tax, wealth tax and proifts transferred from the Reserve Bank and Railways and contributions made by the Posts and Telegraphs.

The main sources of revenue for the states are land revenue, sales tax, agricultural income tax, state excise duties, registration and stamp duties. The share of Union taxes and duties and grants-in-aid received from the Union constitute a substantial item in State finance.

The devolution of resources from the Union to the States is perhaps the most important feature of public finance in India.

The States receive not only their share of Union taxes and duties, statutory grants and grants-in-aid, but also loans for various development schemes and for rehabilitation purposes.

Non-tax revenues accrue from interest receipts, currency and mint, irrigation, electricity, public works, administrative services, and social and developmental services. The share of the non-tax revenue in the total revenues of the Union government has progressively increased from 1950-51.

Direct taxes include taxes on income and expenditure and those on property and capital transactions. Indirect taxes cover taxes on commodity and excise levies and customs duties.

The share of indirect taxes in the total tax revenue of the Union Government has been steadily on the increase since 1950-51.

The Budget. Under Art, 112 of the Constitution a statement of estimated receipts and expenditure of the Government of India has to be laid before the Parliament for every financial year– 1st April to 31st March. This annual financial statement is known as Budget. The budget shows receipts and payments of the Government under three heads. (1) Consolidated Fund (2) Contingency Fund, (3) Public Account.

Consolidated Fund includes all revenues and loans received by the Government. All expenditure from this account has to be sanctioned by Parliament.

Contingency Fund is a sum placed at the disposal of the President to meet unforeseen expenditure. Amounts spent from this Fund can be re-imbursed from the Consolidated Fund with the sanction of the Parliament.

Public Accounts represents all receipts and payments which are in the nature of a deposit account with the Government like Provident Funds. Small Savings collections etc. No parliamentary sanction is necessary for their disbursement.

Charged Accounts. Under the Constitution certain payments like the emoluments to the President or Supreme Court Judges are on the Consolidated Account. Expenses on this account do not require parliamentary sanction as such, but are nevertheless shown separately in the budget.

Appropriation Act. The estimates of expenditure are placed before the Lok Sabha in the form of a Demand for Grants. Ordinarily a separate demand is made for each ministry. The Appropriation Act authorises withdrawal of the estimated expenditure from the Consolidated Fund.

Zero-based Budget

It is proposed to commence zero-based budgeting in the Central government from 1986-87 to be effective from the 1987-88 budget, the Minister of State for Finance, Mr. Janardhan Poojari, informed the Rajya Sabha on Dec. 3, 1985.

The need for the Central government departments to adopt zero-based budgeting has been recognised in principle.

This requires identification and sharpening of objectives, examination of various alternatives of performing identified tasks, cost-benefit analyses, prioritisation of objectives and activities, identification and elimination of redundant activities and designing and ranking decision packages.

Zero-based budgeting devised by American corporate world in 1960's will do away with the traditional incremental approach. Instead every item of expenditure a programme will have to justify its viability in cost-benefit terms so as to get a budgetary provision in its favour in the next budget.

Though this form of financial planning is adopted ostensibly for ensuring that every rupee is spent on result-oriented activity, critics say that non-viable but popular programmes may be jettisoned in the long run.

Finance Act embodies the tax proposals of the budget which are passed by Parliament each year.

Though the budget is prosaically described as the Annual Financial Statement, it is something more than that in the context of the Indian economy. It is the primary instrument by which plan policies are implemented. Since the plan encompasses all aspects of the national economy, the budget becomes the regulatroy mechanism, which controls money supply, credit, prices, public debts, industry, imports and exports, agricultural output, savings, investments and the national income as a whole.

Revenue and Capital Budget. Under the Constitution, Budget has to distinguish expenditure on revenue account from other expenditure. A budget, therefore, comprises (i) Revenue Budget and (ii) Capital Budget.

Revenue Budget consists of the revenue receipts of Government (tax revenues and other revenues) and the expenditure met from these revenues. Broadly speaking, expenditure which does not result in creation of assets is treated as revenue expenditure. All grants given to State Governments and other parties are also treated as revenue expenditure.

Capital Budget consists of capital receipts and payments. The main items of capital receipts are loans raised by Government from the public which are called *Market Loans* borrowings by government from Reserve Bank and other parties through sale of Treasury Bills (which are repayable after 91 days, but renewable), loans received from foreign Governments and bodies and recoveries of loans granted by Central Government to State Governments and other parties.

Capital payments consist of capital expenditure on acquisition of assets like land, buildings, machinery, equipment, as also investments in shares etc. and loans and advances granted by Central Government to State Governments. Government companies, corporations and other parties. Capital Budget also incorporates transactions in the Public account.

NEW POLICY: AN APPRAISAL

Has the much vaunted new economic policy, introduced in 1985, brought any tangible change in Indian society? Is the economy really liberalised to usher in a new vibrant India in the 21st century?

Renowned economists and political philosophers — Prof. Jagdish N. Bhagvati, Dr. I. G. Patel, N. A. Palkivala and Prof. Ashok Mitra give their views in different perspectives.

Definitely Not Enough:

Jagdish N. Bhagwati

We really have not liberalised. How do you expect exports to rise, if you do not have flexibility? Even price incentives cannot work without liberalisation. I am not that keen to have a great deal of import liberalisation rightway. We must get internal liberalisation — wihout it we don't have the capacity on the part of people to expand production, diversify output. How then can you expect export growth?

Export performance requires internal liberalisation. If import liberalisation, which is partly linked to flexibility, is going to occur, let us have a lot of flexibility domestically to begin with. Then we will see the effect of import liberalisation clearly.

My feeling is that once the policy makers are firm about the first, and maintain the momentum of domestic liberalisation, we will be able to go ahead with the second, and start borrowing abroad. We won't get into the Latin American situation, we don't need to borrow that much.

Scrap Controls. A large number of controls have no rationale, and when controls get to be pervasive, human nature being what it is, they simply cannot be administered without a great deal of corruption. If you want to invest, why should you not be allowed to take the risk? Or if you produce inefficiently, why should some one else not be allowed to come in and drive you out? Why should you not be allowed to diversify? Now we have gone in for broad banding in some items. But this should be spread through the system.

For the next decade or so there is no question that we will have to go through the public sector route and do our best to try and improve the efficiency of the public sector (hopefully, the government will be able to meaningfully tackle the issue).

There are two schools of thought. The first wants immediate and total dismantling (of controls). The second, to which I belong, wants to do it progressively. More surely and steadily, take two steps forward and, if necessary, one step back. It is not simply an economic issue. Some people say that the forces for the old system — inward-orientation and controls — are too strong.

Now about the "Japanese want to swamp our technology", my own feeling is that they will come in on joint collaborations. They will bring in know-how. They are very good at closed loop arrangements whereby they produce things in India and take back things home. There could be a lot of opportunities for doing that still in India.

Foreign Tie ups. Japanese investment does not have the kind of drawbacks associated with western capital. Our main objection would have been political. I think the diffusion of internal technology is a matter of our own policies in many cases.

Trade liberalisation has to be thought of in broader terms on the international side. The western countries are prepared to trade with, say, the centrally planned economics. China gets market access to US but it does not give market access to its own. The Americans accept that and the Europeans accept that because it is a clear cut case of non-market economy. But with the developing countries now they raise the question of reverse market access.

The political economy of protectionism has become complicated and the forces in favour of open market have increased. Protectionist demands are a tactic. India should therefore get its perspective on protection right rather than go down the road of pessimism and lose again because I don't think that protectionist forces have a free play, and today there are countervailing forces.

- *Prof. Jagdish N. Bhagwati is currently Arthur Lehman Professor of Economics in Columbia University. Excerpts from an interview in the 'Economic Times'.*

Needs Strong Will:

I.G. Patel

Mr. Rajiv Gandhi promised in 1984 a 'Government that works faster' — thus heralding a promise of greater efficiency in general. When asked about the objective of his new government, he used the new-famous phrase that his objective was to take India into the twenty-first century.

How far he has achieved this?

The emphasis on efficiency, competition and modernisation is certainly welcome as also the endeavour to reduce the rigours of controls and the complexity of the fiscal system and the incidence of subsidies.

The new policies, however, are not likely to gather sufficient momentum and thrust, of even acceptance, unless Mr. Gandhi is willing to occupy the high moral ground of eliminating all arbitrary and discretionary economic power and of dismantling the alliance between his political party and the already entrenched vested interests in idustry, trade and agriculture.

This would amount to forging an altogether new style of political leadership, willing to infuse new blood at different levels of the party; willing to share power with various instrumentalities of the State itself such as local governments, the civil service of the Central Bank; willing to forge a relationship of growing trust with all agents or change and awareness in society such as the Press, the intelligentsia and the community of social workers or religious leaders; willing to heal the wounds of partisan politics and capable of trust in the moral sanity of the masses rather than in the manipulation of party bosses.

Internal Competition. Even so, the strategy of deregulation and surrender of arbitrary power must be carefully planned in advance, with one phase following another naturally in a reinforcing manner, and beginning perhaps with a focus on making internal competition a reality in every respect. There should be no attempt to oversimplify matters. Inefficiency is not confined to the public sector or to industry only but is a feature of the entire economy; and efficiency is not just a function of competition or freedom from controls.

Nor is efficiency the only or the most pressing problem. The task of raising resources and of making a decisive impact on mass poverty, for example, require the kind and scale of effort which are beyond the scope simply of liberal economic principles.

Above all, the economic problem does not present itself in isolation; and in India at least, the task is rendered none the easier by the heterogeneous character of the society and the national insistence simultaneously on maintaining an egalitarian, democratic, fraternal and peaceful society with a positive role to play internationallv.

Stupendous Task. There is hardly any other country anywhere in the world where the Prime Minister has to face a more complex or a more rewarding task; and there is no need to pretend or to create the expectation that what may be feasible elsewhere is necessarily practical in our historical context.

But the task is by no means hopeless. Mr. Gandhi still commands the goodwill of large sections of the Indian society. While there is a section which still dreams of revolutions and a thorough overhaul of property rights and production relations, not many believe after the recent record of China and the Soviet Union — that is a necessary or a desirable path in the long run; and fewer still think of revolution as a practical proposition in the foreseeable future.

500-Rupee Notes This Year

Currency notes of Rs. 500 denominations are proposed to be introduced during 1987, the minister of state for finance, Mr. Janardhan Poojari, informed the Rajya Sabha on November 4, 1986.

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Notes in circulation increased by Rs. 442.65 crore to Rs. 27,133.03 crore, following its previous decline of Rs. 206.52 crore, during the week ended October 31, 1986.

A statement issued by the Reserve Bank of India said the investments improved by Rs. 3,082.15 crore whereas foreign securities remained unchanged at Rs. 1,564.06 crore during the week.

Balances held abroad, Government treasury bills and deposits of the Union Government went down by Rs. 127 crore. Rs. 324.35 crore and Rs. 36.89 crore respectively.

The deposits of the State Governments and the banks increased by Rs. 2.11 crore and Rs. 2,604.98 crore respectively.

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The total foreign debt at the end of March, on Government account works out to Rs. 26718.42 crore.

The debt repayment, on Government account during 1986-87, is estimated to be around Rs. 862 crore.

Interest payment is Rs. 582 crore. Minister of State for Finance Janardhan Poojary told the Rajya Sabha.

Nor do I think it is necessary to wait for the emergence of a new party to achieve significant results. One of the most heartening things about India today is that there is an altogether new ferment among the educated young.

This ferment is most in evidence at present in a large number of voluntary activities, in an upsurge of highly skillful and bold investigative journalism exposing much inequity, violence and humbug in society, and in a variety of protest movements that erupt from time to time unexpectedly in all parts of the country.

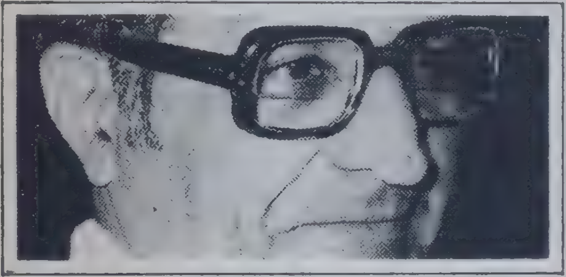
Strong Will. Whatever else may be in short supply in India, courage, conscience and the desire to connect with the rest of the community are not. Harnessing all these through a new style of leadership is not only possible; the country has been anxiously waiting for it and will be inclined to be tolerant towards anyone who is able at least to establish his credentials.

Leaders of nations are seldom giants and hardly ever saints. But they have to establish that they care and understand, that they have courage and a capacity to put the country before themselves or their parties and their friends, and thus to unite divergent interests and aspirations. Does Rajiv Gandhi really have what it takes? Only time will tell. But if he does, India may well take him into the twenty-first country.

- *Dr. Patel is the Director of London School of Economics and Political Science. From the Kingsley Martin memorial lecture delivered at Cambridge on November 5, 1986.*

Good Beginning:

N.A. Palkhivala



The New Economic policy as reflected on the budget of 1986-87 has been one of consolidation, with doses of political tranquillisers.

The shroud of secrecy, a feature of past budgets, was absent this time. The promise of stability, given in 1985 has also in a large measure been fulfilled. The lower rates of individual and corporate tax had been continued. The much-needed reliefs to the middle class and to the poor were welcome.

Apparently not unwelcome are also the three political tranquillisers — they were exactly those which characterised the 1984-85 budget — encouragement to smallscale industries, the anti-poverty programmes and the mass loan "melas".

I am not against the anti-poverty schemes. No right-minded person could possibly object in principle to alleviation of poverty in any form or to any encouragement given to the small entrepreneur. But the way in which these programmes were implemented left much to be desired.

Scourge of Black Money. The National Institute of Public Finance and Policy report on black money published in 1985 regarded the anti-poverty programmes as one of the sources of black money. Research studies revealed that 50 to 80 per cent of the anti-poverty programmes represented public money going down the drain.

The last of the tranquillisers — a total defeat of economics at the hands of politics — was the mass loan "mela" in which nationalised banks were expected to help the poor by compulsorily granting a certain number of loan applications without security and to be later written off.

The "mela" virtually amounted to distribution of bank funds among persons selected according to an undefined yardstick. In a country where family comes first, caste second and party third, the nation is hardly relevant. Inevitably, as the "meala" gathers momentum, it is bound to entail a heavier tax burden on the nation.

On the working of public sector: There was no reference in the budget about "privatising" some of them. The Government should offer a part of the shares of public sector undertakings to the people

- *Mr. N. A. Palkhiwala, India's former Ambassador to the United States' is a renowned economist, taxation consultant and constitutional expert.*

Economic Crisis:

Dr. Ashok Mitra

The Centre's new fiscal policy has placed the country on the threshold of a major economic crisis.

In the absence of structural reforms to stimulate growth and remove poverty, the new economic policy based on the "capitalist philosophy" would only lead to further erosion of the purchasing power and widespread unemployment.

The Centre's plan to import sophisticated technology for boosting exports was based on the advice of the International Monetary Fund and the World Bank to perpetuate what he called the capitalists' interests. While imports have increased, exports have almost stagnated, with U.S. and West Europe adopting a restrictive import policy.

Indiscriminate automation and computerisation would further aggravate unemployment.

- *Dr. Ashok Mitra, former Minister of Finance, West Bengal, is a well known Marxist theoritician and economist.*

THE SEVENTH PLAN

The Seventh Five-Year Plan (1985-90) envisages an aggregate outlay of Rs. 348,148 crore with a public sector outlay of Rs. 1,80,000 crore. The draft plan has become a national document for the planning process in the country till 1990.

The plan envisages a total investment of Rs. 3,22,366 crore. Ninetyfour per cent of the total investment would be financed from domestic fund, with a "tremendous" effort at resource mobilization.

Public Sector. Of the public sector outlay, the investment component would be Rs. 1,54,218 crore. This investment would be financed to the extent of Rs. 54,422 crore (32 per cent) by own savings, Rs. 84,062 crore (56 per cent) by draft on private savings and about Rs. 18,000 crore by foreign borrowings.

The outlay for the central sector will be Rs. 95,534 crore, states Rs. 80,698 crore and Union territories Rs. 3,768 crore.

The Plan places the deficit financing at Rs. 14,000 crore and net borrowings at Rs. 30,562 crore.

The target of additional resources mobilization by the Centre is placed at Rs. 22,212 crore. The success of the Plan is crucially dependent on the achievement of the targets of additional resources mobilization and of public savings.

As postulated in the approach paper, full employment and productivity, along with infrastructure and human resource development have been taken as the guiding principles.

Food Front. Continued self-sufficiency in food and expansion of national system of food security have been given high priority. Special efforts would be made to increase the production of oilseeds, pulses, vegetables and horticulture. Productivity in agriculture would be increased through more effective utilization of irrigation and other potentials. In industry emphasis is being laid on modernization and high technology.

In the field of employment, a major objective of the Plan is to ensure that growth of employment opportunities is faster than the growth of labour force.

The employment potential is expected to increase by 40 million standard person years against an addition to the labour force of 39 million during the plan.

Agriculture. With a view to achieving a faster rate of growth in agriculture and industry, emphasis is laid on investment in infrastructure.

This is done to see that shortages in power, transport and coal would not arise for the scale of activities envisaged in the Plan, which provided a significant increase in the share of energy to the tune of 32 per cent in the public sector outlays—the largest.

One more major thrust in the Seventh Plan is human resources development.

Public sector outlays for social services show a considerable increase compared to the Sixth Plan. Besides expansion of the existing programmes in education, health, science and technology, new initiatives and innovative measures are contemplated in this area.

The balance of payment protections over the five years (1985-90) estimate exports at Rs. 60,653 crore with imports at Rs. 95,437 crore, giving an adverse trade balance of some Rs. 34,700 crore.

Plan Estimates. The following are estimates of financial resources for the public sector plan for 1985-90.

Item	Amount (Rs. crore at 1984-85 prices)
Balance from current revenues at 1984-85 rates of taxes	(—)5,249
Contribution of public enterprises	35,485
Market borrowings (net)	30,562
Small savings	17,916
State provident funds	7,327
Term loans from financial institutions	4,639
Miscellaneous capital receipt (net)	12,618
Additional resource mobilisation	44,702
Net capital inflow from abroad	18,000
Deficit financing	14,000
Aggregate resources	1,80,000

Public Sector. The following are the public sector outlays in the Seventh Plan.

(Rs. crore)

SI.	Heads of development	Total
1.	Agriculture	10,573.62
2.	Rural development	9,074.22
3.	Special area programmes	3,144.69
4.	Irrigation and flood control	16,978.65
5.	Energy	54,821.21
		(include)
	Power	34,273.46
	New and renewable sources of energy	519.55
	Petroleum	12,627.67
	Coal	7,400.58
6.	Industry and minerals	22,460.83
		(include)
	Village and small scale industry	2,752.74
	Large and medium industry	19,708.09
7.	Transport	22,971.02
		(include)
	Railways	12,334.55
	Roads	5,200.04
	Road transport	1,990.10
	Other transport	3,446.33
8.	Communication, information and broadcasting	6,472.46
		(include)
	Telecommunications	4,538.74
9.	Science and technology	2,466.00
10.	Social services	29,350.46
		(include)
	Education culture and sports	6,382.65
	Health including medical	3,392.89
	Family welfare	3,256.26
	Housing and urban development	4,259.50
	Water supply and sanitation	6,522.47
11.	Labour and labour welfare	333.72
	Total	180,000.00

States' Outlay. The following is the distribution of Plan outlays among the various States and Union Territories envisaged in the Seventh Plan for 1985-90.

States	**Outlay (in crore)**
1. Andhra Pradesh	5,200.00
2. Assam	2,100.00
3. Bihar	5,100.00
4. Gujarat	6,000.00
5. Haryana	2,900.00
6. Himachal Pradesh	1,050.00

7. Jammu and Kashmir	1,400.00
8. Karnataka	3,500.00
9. Kerala	2,100.00
10. Madhya Pradesh	7,000.00
11. Maharashtra	10,500.00
12. Manipur	430.00
13. Meghalaya	440.00
14. Nagaland	400.00
15. Orissa	2,700.00
16. Punjab	3,285.00
17. Rajasthan	3,000.00
18. Sikkim	230.00
19. Tripura	285.00
Union Territories	
1. Arunachal Pradesh	400.00
2. Chandigarh	203.00
3. Dadra and Nagar Haveli	46.00
4. Delhi	2,000.00
5. Goa, Daman and Diu	360.00
6. Lakshadweep	43.00
7. Mizoram	260.00
8. Pondicherry	170.00

Planning Commission. Economic planning in India is under the aegis of the Planning Commission. In March, 1950, the Government of India set up a Planning Commission to prepare a plan for 'the most effective and balanced utilisation of the country's resources'. The Planning Commission has since been functioning as the kingpin of national development.

The composition of the Commission as on January 1, 1987:

Rajiv Gandhi (Chairman), Dr. Manmohan Singh (Dy. Chairman), Sukhram (Minister of State for Planning), Abid Hussain, Hiten Bhaya, Dr. Raja J. Chelliah and Prof. M.G.K. Menon.

First Plan 1951-56. The first Plan with a total outlay of Rs. 2378 crore was a rather haphazard venture, as the Planning Commission had no reliable statistics to work upon. Besides, the plan had to be co-related to the prevailing activities of various government departments. The result was patchwork of isolated projects. All the same, the plan had a national character and was based on a rational hypothesis. It laid emphasis on agriculture, irrigation, power and transport so as to provide an infrastructure for rapid industrial expansion in future. The plan turned out to be more than a success, mainly because it was supported by two good harvests in the last two years.

Second Plan 1956-61. The Second Plan (1956-61) was a big leap forward. It laid special stress on heavy industries. The industrial policy resolution was amended so as to shift the primary responsibility for development on the public sector. Private sector was left to handle consumer industries. But the great quantity of imports that the Plan envisaged in both public and private sectors, practically denuded India's accumulated sterling balances (as much as Rs. 500 crores) in two years and compelled the country to seek extensive foreign aid. Agriculture and small-scale industries remained sluggish, without adding any momentum to development.

Third Plan 1961-66. The Third Plan rode on a wave of high expectations following overall growth of the Indian economy in the first two plan periods. The Third Plan aimed at establishing a self-sustaining economy, internal resources having been strained to the utmost, the Plan had to rely on heavy foreign aid.

During the Third Plan, national income (revised series) at 1960-61 prices rose by 20 per cent in the first four years but registered a decline of 5.6 per cent in the last year. Per capita real income in 1965-66 was about the same as it was in 1960-61.

A growing trade deficit and mounting debt obligations led to more and more borrowings from the International Monetary Fund. The rupee was devalued in June, 1966 to little purpose, as it soon turned out. The Third Plan had become stuck.

Interim Planning. The Third Plan having gone awry, planning itself had become discredited in the eyes of many and demands were made from different quarters to declare a Plan holiday. But neither the Government nor the Planning Commission admitted failure. They refused to fall in with the demand for a Plan holiday and proceeded to draw up the Fourth Plan as from 1966-67. But the economy had so far degenerated that the Fourth Plan could not be started in time, that is to say, in 1966. Instead, as a stop-gap arrangement planning was made annual. The Annual Plans continued

Inflation Lowered to 3.7 per cent

The inflation rate for the financial year 1985-86 as a whole is estimated at 3.7 per cent compared with 7.6 per cent for 1984-85.

This estimate has been made on the basis of the wholesale price index for the last week of the year. During the last five years, the inflation rate touched the peak in 1983-84 (8.2 per cent). The lowest during this period was 2.4 per cent in 1981-82.

According to official sources, the seasonal rise in prices during 1985-86 commenced in the middle of April 1985 but petered out early in August 1985. Between March 30 and August 3, 1985, the index increased from 346.3 to 365.9 or by 5.7 per cent. At his point, the annual rate of inflation was also 5.7 per cent.

Thereafter, as expected, the index declined by 2.8 per cent up to the beginning of January 1986. Since then, the increase in the index has been only one per cent. The value of the index on March 29, 1986, was actually lower by 6.8 points from that on August 3, 1985.

The Rise and Fall of Rupee.

The Rupee was first minted in India during the reign of Sher Shah around 1542. It was a silver coin weighing 179 grams of pure silver. The Rupee soon displaced the old gold coins and bacame the standard currency in India and a currency of repute outside India. The English East India Company adopted the Rupee as their currency in India.

In March 1947 India became a member of the International Monetary Fund (IMF) and the exchange value of the Rupee came to be fixed by IMF standards. But with prices moving upwards, India was obliged to devalue the Rupee by 30.5 per cent on Sept. 18, 1949.

From 1955 onwards Rupee was fighting a battle for survival against the everrising domestic prices. It started losing its value steadily both in the home market and in the international market. This led to a second devaluation of the Rupee by 57 per cent on June 6, 1966. But the devaluation did not stop the rot. The Rupee continued to fall.

On Sept. 24, 1975 the Government of India decided to de-link the Rupee from the pound and to adopt a basket of currencies instead. The exchange value of the Rupee was thus determined in relation to a 'weighted' average of the currencies of India's leading trade partners.

The contents of the basket of currencies are kept secret; presumably it includes major currencies like US dollar, Pound Sterling and so on even though the ratio of each currency in the basket could not be guessed. The secrecy of the basket gives the arbitrary discretion to the Reserve Bank of India to change the value of the rupee whenever it feels so.

Decimal System

The Indian Currency System was converted into the decimal system by the Indian Coinage (Amendment) Act, 1955. The amended Act was brought into force only on April 1, 1957.

The first one-paise *coin under the decimal system was issued in March 1962 and the first one* Rupee *coin in July 1962. From Oct. 1, 1964 the one-digit denominations of one-paise (1p.) and two-paise (2p.) coins were supplemented by the issue of three-paise (3p.) coins.*

With the amendment of the Indian Coinage Act, the old system of Rupees, annas, pies 1 Rupee= 16 annas. 1 anna =12 pies *was replaced by the* Rupee-paise *system and the intermediate coin* anna *was abolished.*

Demonetisation

There have been two demonetisations in India in recent times, the first in Jan. 1946 and the second in January 1978. In 1946 two ordinances were issued on January 12 the Bank notes (Declaration of holdings) Ordinance 1946 and Bank notes (Demonetisation) ordinance, 1946.

These Ordinances applied only to British India but princely Sates in India were also persuaded to issue parallal demonetisation Ordinances in their states, so that demonetisation would take effect all over India. The first ordinance called for a declaration of all notes of the value of Rs. 500 and above.

The Indian States which did not issue ordinances demonetising high denomination currency notes were required to exchange their holdings of demonetised notes before the 7th March, 1946.

The total value of high denomination notes exchanged by 31st March 1964 was Rs. 123.37 crores of which as much as Rs. 109.67 crores were exchanged before 26th January, i.e. within a fortnight of the issue of the Ordinance.

The second demonetisation *was promulgated on the night of January 16, 1978. This demonetisation, however, affected only notes of the value of Rs. 1000, 500, 10000 while the 1946 demonetisation covered notes of the value of Rs. 500 as well.*

from 1966 to 1969—1966-67, 1967-68 and 1968-69.

Fourth Plan 1969-74. The Fourth Plan (1969–74) officially commenced on April 1, 1969 with the publication of the Draft Plan. *Growth with stability* was the main objective of the Plan. Agriculture was expected to lead the growth with a rate of 5 per cent per annum. Such a growth in agriculture would set up a chain reaction in the economy. The target for the growth rate of industry was set at about nine per cent per annum. Altogether the national income was expected to increase at the rate of 5.5 per cent per annum. Allowing for the increase of population at the rate of about 2.5 per cent, the per capita income was expected to increase at the rate of 3 per cent per annum or about 16 per cent in the Fourth Plan period.

Fifth Plan 1974-79. The Fifth Plan draft as originally drawn up was part of a long term *Perspective Plan* covering a period of 10 years from 1974-75 to 1985-86. The perspective plan attempted to co-ordinate various sectors of the economy in terms of the new slogan *Garibi Hatao* (Remove Poverty). The long term rate of growth which the economy was expected to achieve on a self-sustaining basis was put up at 6.2 per cent per annum.

By the time the Fifth Plan was approved by the National Development Council (Sept. 1976) its premises had become obsolete and the total outlay had to be increased from Rs. 37,463 crore to 39,303 crore.

This belated attempt had an inglorious end in another 6 months, when the Janata party came into power. They scrapped it unceremoniously.

The Janata government reconstituted the Planning Commission and announced a new strategy in planning. The strategy involved a change in objective and pattern. The objective was laid down as *Growth for Social Justice* instead of *Growth with Social Justice*— a distinction without a difference. The new pattern was the *Rolling Plan* which merely meant that every year the performance of the Plan will be assessed and a new Plan based on such assessment will be made for the next year—a continuous planning, in fact. The rolling plan started with an annual plan for 1978–79 and as a continuation of the terminated V plan.

Sixth Plan The Sixth Plan for 1978–83 was revised and released by the Janata government on Dec. 2, 1979. Soon after the release of the revised plan Janata went out of power and a Congress government under Indira Gandhi took over. The Congress government 'rolled up' the Rolling Plan and superseded the 1978–83 Plan by a new Plan for 1980–85.

The total plan investment for the period 1980–85 was estimated at Rs. 158,710 crores initially. This was increased to Rs. 20,989 cr. in 1982–83 and further to Rs. 25,495 cr. for 1983–84.

1332 Crore in Secret Swiss Accounts

International monetary experts have noticed a surprising jump in "capital flight" (clandestine deposits made in foreign banks) from India.

Significantly this coincides with the economic policy liberalisation introduced by the Indian government in 1985.

According to an International Monetary Fund study, with the leap of Rs. 393 crores in 1985, the secret Indian deposits in Swiss banks have reached an unprecedented Rs. 1,332 crore or Swiss Francs 2,500 million ($ 1,076 million).

According to an expert this is "just the tip of the iceberg".

He believes that at least 15 to 20 times more money is deposited in secret accounts by Indians in banks in Hong Kong, New Jersy, Manhatten, Philadelphia and Bermuda.

In the case of countries like Mexico, Argentina, Brazil and Venezuela, such secret accounts opened by their nationals in foreign banks have led to serious balance of payments problems for those countries and are considered to be responsible for part of the present global debt crisis.

That there are secret numbered accounts of Indian nationals in Swiss banks is an open secret, but it is for the first time that these accounts have received some authenticity and have been quantified in a publication of the IMF.

An IMF publication, quoting statistics collected by the National bank of Switzerland, shows that up to the end of 1984, Indian account holders had deposited in Swiss banks more than Swiss Francs 1,937 million, or equal to Rs. 939 crore.

According to the IMF document, "bank deposits and fiduciary depsoits" of non-resident Indian in Swiss banks amounted to Swiss Francs 788 million (Rs. 378 crore at the average Franc-Rupee exchange rate for that year) in 1979.

According to this report, fiduciary deposits of Indians at the end of 1985 stood at Swiss Francs 1.6 billion and bank deposits amounted to Swiss Francs 894 million.

Fiduciary deposits are those that Swiss banks take from foreign nationals. The banks invest the money without revealing the identity of the depositor but at his risk.

THE RESERVE BANK PAST FIFTY

The Reserve Bank of India, the monetary authority of the country, crossed 50 years of its existence in 1985. The achievements of this central banking authority in controlling the finances of a country reckoned as among the ten leading industrialized nations of the world has been commendable.

A regular central banking system for the ountry was first instituted under the Reserve ank of India Act, 1934. Until then the nperial Bank of India functioned as a central ank of sorts. But beyond acting as bankers to the government, the Imperial Bank did little else as a central bank.

The Reserve Bank came into existence on April 1, 1935. The Bank was originally constituted as a share holders' bank but was later converted into a state-owned bank by the Reserve Bank (Transfer to Public Ownership) Act, 1948. The Reserve Bank is divided into two distinct and separate departments, the *Issue department* and the *Banking department*. In addition to these, there is an agricultural credit department, which maintains an expert staff to study all questions of agricultural credit.

Functions. The primary functions of the Reserve Bank are: (1) Issue of paper currency, (2) Acting as bankers to Government including raising of public loans and management of public debt, (3) Controlling the activities of commercial banks, (4) Acting as a bank of accommodation and a lender in the last resort, (5) Maintenance of the external value of the rupee, (6) Provision of agricultural credit, (7) Collection and publication of monetary and financial information.

Under the Reserve Bank of India Act, the joint-stock banks in India were classifid as *Scheduled and Non-scheduled Banks*. Scheduled Banks are those with a minimum capital and reserves of Rs. 5 lakh who having satisfied the Reserve Bank that their affairs are not conducted in a manner detrimental to the interests of the depositors, are included in the Second Schedule to the Reserve Bank of India Act, 1934.

Non-Scheduled Bank are divided into four categories according to their capital: (1) A, with a capital of 5 lakhs and over, (2) B, with a capital between 1 and 5 lakh, (3) C, with a capital between 50,000 and 1 lakh and (4) D, with a capital of less than 50,000.

Dual Role. The Reserve Bank's role in the Indian economy is dual— promotional and regulatory. In recent years, its promotional role has been more predominant than the regulatory role. It has helped the Government in its development projects by raising loans at fairly low interest and by providing funds for deficit financing.

In developing the money market and the capital market, the Reserve Bank's promotional role has been exceptional. In its regulatory role, the Reserve Bank's monetary policy has been oriented to the national objective of economic growth with stability. Even though the conventional weapons of a central bank have only a limited operation in regulating the monetary system, the selective credit control and other directives issued by the Reserve Bank have had a salutary effect on the economy.

Affiliates. The following institutions are affiliates of the Reserve Bank: (i) *Agricultural Refinance Corporation*. (ii) *Deposit Insurance Corporation and* (iii) *Unit Trust of India*.

The Industrial Development Bank of India (IDBI), originally established in 1964 as an affiliate of the Reserve Bank, was statutorily de-linked from the Reserve Bank in February, 1974.

Legislative Changes. A series of amending acts in 1962, 1963 and 1974 have expanded the jurisdiction and powers of the Reserve Bank, as a banker's bank and the custodian of national credit, even by bringing non-banking companies which receive deposits, under its control and supervision.

The Reserve Bank of India (Amendment) Act, 1974, widened the powers of the bank to provide refinance facilities to scheduled banks and state cooperative banks, enlarged the scope of the term "agricultural operations" widened the scope of the Bank to act as agent so as to enable the Bank to issue and manage bonds and debentures on behalf of statutory corporations, enlarged the list of foreign securities eligible to be held as assets of the Issue Department of the Bank, modified the definition of the term "liabilities", provided statutory protection to banks to exchange freely credit information mutually among themselves and vested the Bank with better powers to exercise control over non-banking institutions receiving deposits.

The Interest Tax Act, which came into operation in Sept. 1974, levied a tax at the rate of 7 per cent on interest earnings of the scheduled banks with effect from the assessment year 1975-76.

The Act was suspended in 1978-79 but revived in 1980-81 and extended to term lending institutions like the Industrial Finance Corporation of India.

The Reserve Bank of India (Amendment) Act, 1978. The Reserve Bank of India (Amendment) Act, 1978, came into force from July 1978.

Briefly, the amendments empower the

Reserve Bank to open gold accounts abroad, invest in securities guaranteed by a foreign government, open accounts with branches of Indian banks abroad and invest in the shares and securities of an international or regional bank or financial institutions formed by foreign governments or principal currency authorities.

The amendment Act also empowers the Reserve Bank to make rupee loans to scheduled banks and certain specified financial institutions to enable them to purchase foreign exchange from the Reserve Bank for financing import of capital goods and for other approved purposes.

The existing stipulation that the Reserve Bank's purchases from or sale to scheduled banks of foreign exchange should be in amounts of not less than the equivalent of one lakh rupees has been removed.

Commercial Banking. There were 50,980 bank branches in India at the end of 1984 at the rate of one bank for every 13,000 of population. This does not mean that commercial banking has penetrated to every corner of the country.

Modern Indian banking originated in the presidency towns of Bombay, Calcutta and Madras. These towns were not only the headquarters of the British Presidencies of Bombay, Bengal and Madras but also the rincipal British trading centres in India. The British trading houses who carried on business in the presidency towns first started banking as an ancillary of trade. Most of hese trading-cum-banking houses came to grief between 1829 and 1832 owing to their participation in speculative trade. Some firms ike Grindlays, however, survived and continued to carry on trade and banking ogether.

The Presidency Banks functioned as bankers to the East India Company at Calcutta, Bombay and Madras. They gradually took over the banking business of the British Agency houses. The Imperial Bank functioned as bankers to the Government of India nd the provincial governments and at the ame time carried on commercial banking.

oint-Stock Banking. Meanwhile, in 860 the principle of joint-stock banking with mited liability was recognized by the Government of India. This opened the way for the emergence of private commercial banks with limited liability. The Bank of Upper India was formed in 1863 and the Allahabad Bank in 1865. By 1894, there were 14 joint-stock banks in India, most of them run by Europeans.

In 1894, the Punjab National Bank, a purely Indian concern, came into being. Other banks followed.

With the end of the War, India witnessed a new spate of banking ventures. The great majority of these new banks were wiped out during the great depression of the thirties.

Merchant Banking

Merchant Banking is an old term which signifies financing goods in transit and providing financial advice. It is, in other words, what is today described as Consultancy Business. Consultancy functions include everything pertaining to a company from its very formation—preparation of prospectus, issue of shares, syndication of underwriting, negotiation of loans, permits, sanctions and other legal formalities and assistance in every field from choice of technology to the mark of products.

Merchant banking is fairly new in India. It started only in the seventies. The leaders in this matter were the State Bank of India and the public sector banks. Central financial institutions like ICICI, consultancy organizations like the Tatas, brokers' firms and financing agents have followed suit.

The SBI is the largest merchant banker in India:

Considering the innumerable obstacles to the promotion of new enterprises—government regulations, Reserve Bank directives, foreign exchange complications, import and export hurdles—it is well that our banks and other institutions have come forward to help and advise new entrepreneurs. Otherwise, many of the new companies would have been still-born and many more would have died in their infancy.

The Travancore National & Quilon Bank Ltd. (in the princely State of Travancore), one of the banks that outlived the depression, fell a victim to a political vendetta and was compulsorily liquidated in 1938. This started a chain reaction, leading to the closure of as many as 64 banks all over India. Indian joint-stock banking has thereafter progressed without serious setbacks.

In 1955, the Imperial Bank of India was nationalized and re-named the State Bank of India. In 1959-60 the State Bank took over as subsidiaries 7 provincial banks which were originally started as State Banks of the princely States of Hyderabad, Bikaner, Jaipur, Indore, Travancore, Saurashtra, Mysore and Patiala. With this takeover, the State Bank of India emerged as the colossus of Indian banking, with a network of nearly 2,500 branches all over India.

Social Control of Banks. The idea of a social control of banks was a compromise worked out at the Faridabad session of the Indian National Congress in April 1968, between the out-and-out champions of nationalization of banking and the conservative section advocating a go-slow policy. Social control of banks was given effect to by legislation on Feb. 1, 1969.

The object of the legislation generally was to bring in *socialization of credit without nationalization* of banks. This involved the prevention of the exclusive use of bank credit by big business houses and a wider dispersal of credit, so as to direct its flow to priority areas and make it a live instrument of development.

It must be said to the credit of the commercial banks that they acted up to the ideal of social control, long before it materialized into law. They had reconstituted the Boards of Management and realigned their credit schemes.

Nationalization. Despite all enthusiasm evinced by the banking community to implement the objectives of social control, the idea was abandoned overnight, as it were, and 14 leading banks of the country were nationalized by a Presidential Ordinance on July 19, 1969. The ordinance became law by the *Banking Companies (Acquisition and Transfer of Undertaking) Act, 1969.* This was declared unconstitutional by the Supreme Court on February 10, 1970. On February 14, 1970, the President issued a validating ordinance, renationalizing the 14 banks with retrospective effect from July 19, 1969. This ordinance rectified the irregularities pointed out by the Supreme Court and was enacted into law as the *Banking Companies (Acquisition and Transfer of Undertaking) Act, 1970.*

The leading commercial banks, on the eve of nationalization, numbered fourteen, the oldest being the Allahabad Bank and the biggest, the Central Bank of India.

On April 15, 1980 the President promulgated an Ordinance—*The Banking Companies (Acquisition & Transfer of Undertaking) Ordinance, 1980*—under which 6 leading commercial banks, each with deposits of Rs. 200 crores and above, were nationalised. They are (1) Andhra Bank, (2) Corporation Bank, (3) New Bank of India, (4) Oriental Bank of Commerce, (5) Punjab & Sind Bank and (6) Vijaya Bank.

Profits Fall. The overall profits of 20 nationalized banks as per data furnished by the Reserve Bank of India to the ministry of finance and placed in the Rajya Sabha in 1985 showed a decline of 3.3 per cent to Rs. 57.29 crore in 1984 as against Rs. 59.23 crore in 1983.

Six of the 20 nationalized banks namely, Bank of Baroda, Bank of Maharashtra, Central Bank of India, New Bank of India, Dena Bank and United Bank of India showed a decline, while the rest showed higher profits in 1984 than in the previous year.

Those nationalized banks which registered an increase of more than 5.0 per cent in their profits during 1984 were: Allahabad Bank (5.9 per cent); Andhra Bank (6.5 per cent); Canara Bank (11.1 per cent); Corporation Bank (18.3 per cent); Oriental Bank of Commerce (13.9 per cent); Punjab National Bank (5.6 per cent); Union Bank of India (7.2 per cent) and United Bank of India (13.2 per cent).

In terms of decline in profits, New Bank of India came at the top with a fall of 50.0 per cent, followed by Bank of Maharashtra (37.8 per cent); Dena Bank (32.5 per cent); Central Bank of India (23.3 per cent); Bank of Baroda

LIC to Golden Heights

"People's money, people's welfare" is the new slogan by Life Insurance Corporation which celebrated its 30th birth anniversary in September, 1986.

The nationalisation of Life Insurance business in 1956 was a landmark in the history of independent India. Some 245 companies were nationalised at that time.

The growth of LIC has been phenomenal during the last three decades. From Rs. 336.7 crore new business of December 1957 to a whopping Rs. 7088.45 crore as on 31st March 1986 is a big leap.

Fourteen years after its formation, the Corporation's New Business crossed Rs. 1000 crore in 1970-71. The year 1975-76 saw the business crossing Rs. 2000 crore mark. In 1981-82 the achievement was Rs. 3000 crore. By 1984-85 it reached 5000 crore. And in 1985-86 it touched a new height of Rs. 7088.45.

LIC poised for an accelerated growth and has a business target of Rs. 15,500 crore for the year 1989-90.

Here is some of the LIC investments as on 31-3-86.

	Rs. in crore
Electricity	*1748*
Housing	*1032*
Water Supply & Sewerage	*548*
Land Development Banks	*338*
Bonds & Shares	*794*
Loans to State Road Corporation	*190*

Emboldened by the encouraging response from people of different strata all over the country, the Corporation has set for itself an ambitious target of new business to the tune of rs. 9,000 crores during 1986-87.

Announcing this at a press conference the LIC Chairman, Mr. A.S. Gupta, said the number of policies would be 38 lakhs on the national level. During 1985-86, the Corporation had Rs. 7,088 crores worth of new business and 37 lakh policies.

The LIC was going in a big way to instal microprocessors in different offices to keep pace with the pressure of work and offer improved customer service. About 300 microprocessors were programmed to be installed throughout the country. The workers' unions were no longer opposing installation of these latest and modern machines as they were finding it difficult to work with conventional punch card machines which were being gradually replaced, Mr. Gupta said.

Regarding rural business, the LIC has done about 40 per cent policies in these areas having population of 5,000 or less.

During the Seventh Plan period, the Corporation would make an estimated investment of Rs. 10,000 crores, including the private sector. So far, the Corporation had invested Rs. 1,800 croes on electricity schemes, Rs. 1,400 crores on housing and Rs. 450 crores on water supply in the country. Maharashtra was the best earner State for the LIC contributing 42 per cent of the total business, Mr. Gupta said.

A reduction in the premium rates for 'without profit' policies, a special bonus for 'with profit' policies and introduction of three new plans were announced at the 30th anniversary celebrations at Delhi.

■ *Mr. R. Narayanan is the new Chairman of LIC.*

Profits of 20 Nationalised Banks

(Rs. crore)

Name of the banks		1983	1984
1. Allahabad Bank	"	1.70	1.80
2. Andhra Bank	"	2.48	2.64
3. Bank of Baroda	"	8.60	7.01
4. Bank of India	"	5.11	5.30
5. Bank of Maharashtra	"	1.93	1.20
6. Canara Bank	"	4.96	5.51
7. Central Bank of India	"	3.99	3.06
8. Corporation Bank	"	0.93	1.10
9. Dena Bank	"	1.20	0.81
10. Indian Bank	"	1.40	1.41
11. Indian Overseas Bank	"	4.73	4.82
12. New Bank of India	"	0.72	0.36
13. Oriental Bank of Commerce	"	0.72	0.82
14. Punjab and Sind Bank	"	0.62	0.65
15. Punjab National Bank	"	8.53	9.01
16. Syndicate Bank	"	4.94	5.08
17. Union Bank of India	"	2.90	3.11
18. United Bank of India	"	1.36	1.18.
19. United Commercial Bank	"	2.36	2.36
20. Vijaya Bank	"	0.05	0.06

Source Question-Answer paper placed before the Rajya Sabha on Aug 13, 1985.

(18.5 per cent) and United Bank of India (13.2 per cent).

Top Rank. In terms of absolute profits in 1984, top-notcher was Punjab National Bank, accounting for 16.0 per cent of the aggregate profits in that year. Following the Punjab National Bank were: Bank of Baroda (12.2 per cent of the total); Canara Bank (9.6 per cent); Bank of India (9.3 per cent); and Syndicate Bank (8.9 per cent)—all of which had profits in 1984 exceeding Rs. 5 crore each.

Deposits 90,000 crore

There is an unprecedented growth of bank deposits in the country.

During the fortnight ended on July 4, 1986, the deposits of scheduled commercial banks mounted to Rs. 90,269.85 crore. At the end of 1985 the total deposits was Rs. 85000 crore.

The total credit also rose to Rs. 57290.34 crore from Rs. 56,212 crore.

By 2000, deposits are expected to rise to 2,15,000 crore and credit to 1,22,000 crore.

State Bank of India. The State Bank of India is the successor of the Imperial Bank of India. The establishment of the Reserve Bank of India in 1934 necessitated a change in the status of the Imperial Bank. This was done by the *Imperial Bank of India (Amend ment) Act, 1934.* By this amendment, the Imperial Bank lost its status as a central bank but remained the sole agent of the Reserve Bank, where the latter had no offices of its own. At the same time, the Imperial Bank was given all freedom to function as a commercial bank and to enter into foreig exchange business.

Under the *State Bank of India (Subsidiar Banks) Act, 1959,* the State Bank took ove the control of 8 banks: [See next page]

The State Bank of India, its 7 subsidiarie the 14 banks nationalized in 1968 and the banks nationalized in 1980 are now collec tively called *Public Sector Banks.*

The main objective of the nationalization the leading commercial banks was to initia a new banking policy. The new policy aime at rechannelling bank credit from big indu tries to small sectors or as R. K. Talwar, th

Subsidiary Banks

	Established in	Constituted as State Bank's Subsidiary	Name of the Subsidiary
Hyderabad State Bank	1942	1-10-1959	State Bank of Hyderabad
Bank of Jaipur	1943	1-1-1960	State Bank of Jaipur†
Bank of Bikaner Ltd.	1944	1-1-1960	State Bank of Bikaner
Bank of Indore Ltd.	1920	1-1-1960	State Bank of Indore
Travancore Bank Ltd.	1940	1-1-1960	State Bank of Travancore
Bank of Mysore Ltd.	1913	1-3-1960	State Bank of Mysore
Bank of Patiala	1917	1-4-1960	State Bank of Patiala
State Bank of Saurashtra (formerly known as Bhavnagar Darbar Bank)	1902	1-5-1960	State Bank of Saurashtra

† State Bank of Jaipur subsequently merged with State Bank of Bikaner with effect from 1-1-1963 and the new subsidiary was renamed as "State Bank of Bikaner and Jaipur".

then Chairman of the State Bank of India, put it "to the small man in business, industry and agriculture." The new policy called for many nnovations. In the first place, "the small men" were scattered all over the country. They had to be identified and reached. This meant that banks should branch out into every nook and corner of India.

State Bank's Distinction

Among the 135 largest Banks in the Third World, selected by the "South", the Third World magazine from London, there are seven entries from India:

Rank	Bank	Total Assets (US $ billion)
5	State Bank of India	31.33
52	Bank of India	5.18*
62	Bank of Baroda	4.92*
66	Punjab National Bank	4.55*
75	Canara Bank	4.09*
94	Syndicate Bank	3.31*
105	United Commercial Bank of India	2.75*

In 'Fortune' magazine's list of 100 largest non-U.S. Banks, there is only one entry from India—State Bank of India, ranking 65th Nevertheless, SBI has the distinction of running the largest number of offices among all Banks—10,841.

State Bank of India one of the largest commercial bank groups in the world with a network of 10,894 offices in India and abroad, has accumulated a net profit of Rs 32.04 crore in 1985, an increase of 33 4 per cent over the previous year's Rs. 24 02 crore. —reports UNI from Bombay.

* Assets less contra accounts.

The new policy involved a right-about turn for the old commercial banks. They had to discard their urban and elitist outlook and become ruralized and mass-based. The banking policy in general had to be given an entirely new lead.

Lead Banks. The lead bank system was introduced in 1969. It was based on the concept of what may be called 'area banking'. Each lead bank is allotted a district or districts in different places. The lead bank had the primary responsibility to study the conditions in the area allotted to it and prepare a development plan taking into account the existing credit set-up in the area and providing for filling up territorial or sectoral credit gaps. The plan had to coordinate the credit policies of all institutions in the area. The first lead banks chosen were the State Bank of India, its 7 subsidiaries, the 14 nationalized banks (1968) and 2 non-nationalized scheduled banks.

The first obvious step in ruralizing banking was to open branches in unbanked and poorly banked areas. Till 1968 commercial banks had confined their branches to urban or semi-urban centres only. But even here a very conservative policy was adopted. This is reflected in the fact that the maximum number of branches opened in any one year by the commercial banks came only to 677 and that in 1968 when 14 private banks were nationalized. From 1969 onwards a new dynamism appeared in branch banking. While in 1969, rural branches accounted for roughly 22 per cent of the total number of branches, in 1980 the rural branches increased to 46.6 per cent.

Similarly, a greater number of branches were opened unbanked or poorly banked States. Thus Assam, Bihar and Orissa, notoriously backward in banking, increased their branch strength by 530,596 and 715 per cent respectively, compared to fairly well-banked states like Maharashtra (195 per cent), Gujarat (196 per cent) and Kerala (262 per cent).

ENERGY: OIL BONANZA

India is expected to have a windfall foreign exchange savings of about Rs. 1,500 crore in the import of crude and petroleum products in 1986-87 as a result of fall in their prices in the international markets.

This includes a saving of Rs. 1,200 crore in import of crude and about Rs. 300 crore in refined products.

India's import bill on crude and petroleum products in 1986-87 is expected to be a little over Rs. 3,000 crore, as compared to the import bill of Rs. 4,500 crore in the previous year, according to official estimates.

This bonanza from the oil import front has come as a welcome relief to the country facing balance of payment problems. Substantial savings in foreign exchange are also expected with the reduced costs on import for fertilisers and petrochemicals, based on petroleum feedstocks, official sources indicated.

Spot Market. The country chased till the middle of 1986 about seven million tonnes of crude from the spot markets, taking advantage of the falling prices. The average price for this imports works out at less than 18 US dollars per barrel as compared to the average price of 28 dollars paid in 1985.

The net imports of crude and petroleum products in 1986-87 are estimated at 18 million tonnes, one million tonnes more than the previous year. A reduction of one US dollar per barrel of crude will effect a saving of more than Rs. 150 crore in foreign exchange for India at the current level of imports.

The spot market prices of crude fell to 19 dollars in January 1986 and were around 11 to 14 dollars in April 1986. The spot prices of crude in the international markets then firmed up to around 15 dollars.

World crude prices are expected to remain low and there was little chance of any upward rise in the near future, according to reports received by the Government.

Crude imports made by the country in 1986-87 by taking full advantage of the falling prices are estimated to cost less by Rs. 600 crore relative to the average cost for imports made in 1985-86.

Crude supplies from the Soviet Union in 1986-87 are expected to be 3.5 milion tonnes. However, Soviet Union did not agree to cut in prices despite the fall in international prices. It is selling crude to European countries at around 15 US dollars a barrel.

The indigenous production of crude in 1986-87 is expected to be a little over 30 million tonnes, nearly one million tonne more than the previous year.

The total consmuption of petroleum products in the country is estimated at 43 million tonnes, about two million tonnes more than the previous year.

The increase in the prices of petroleum products effected in February did not lead to any significant reduction in consumption, in the absence of a package of related measures according to oil industry sources.

Oil Exploration. Oil and Natural Gas Commission and Oil India Ltd. are the premier agencies for exploring oil both offshore and onshore. New discoveries of oil and gas were made in Krishna, Godhavari Cauvery, Panna East and Bombay offshore.

The indigenous production of crude in 1985-86 was expected to be 20.94 million tonnes consisting of the onshore production of 9.33 million and offshore production o 20.61 million tonnes.

The crude through-put for 1985-86 wa

The world witnessed another oil price shock in 1986. In contrast to 1973 when oil price rose sky-high, 1986 saw it tumble down to the deepest depths. It has brought in devastating changes in the economy of all the oil producing countries.

Between October 1973 and March 1974, the international price of crude oil shot up from an average $ 2.50 to $ 12.90 a barrel. During the same time span in 1986, it crashed from $ 27 a barrel in January to $ 8.50 at the end of July. The sharp decline in prices sent out shock waves in oil producing countries around the world.

Saudi Arabia, as a moderate giant in the OPEC, tried to stabilise world price by persuading member countries to cut production, but changed gear when it found isolated in the scramble for larger share of the market to offset decline in prices.

Yamani's Exit. *The decline of OPEC–Organisation of Petroleum Exporting Countries-as a dominant force in the oil market was a pointer to the growing crisis. the peremptory dismissal of Sheik Yamani in October as Saudi Arabia's Oil Minister highlighted the nervousness and confusion in the international oil market.*

Sheik Yamani: the great fall.

Non-OPEC producers pushed up their share of the market in a dramatic manner. In particular, Soviet Union, the largest producer in the world, US and UK made major inroads into the oil market. Despite prolonged efforts OPEC has not been able to persuade Britain to curb its North Sea production.

Thus, OPEC formed in 1962 at Baghdad to protect against the oil companys' reduction of middle east oil prices, (now has 13 members: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, UAE and Venezuela) strangely found itself in the same plight after a quarter century–still fighting aginst oil slump.

Holding two-thirds of world's oil reserves and producing half the non-communist world's oil in its heyday in 1979, OPEC's voice was decisive for almost a decade. In 1973 oil prices began shooting up to the shock of all oil importing countries. The oil producers straddled the world economy like a colosus with all the petro-dollars. This panicky situation sent rest of the world in exploration ventures all-around. The US, Soviet Union, Britain, Mexico and Norway made successful forays and relegated OPEC to a less strategic role. Today they account for only ⅓ of world production.

Impact on the Gulf. *With oil still accounting for about 95 per cent of Gulf exports, half of GDP and roughly two-thirds of governments' revenues, the oil price crash was a harsh blow to the growth plans of all the Gulf nations.*

The largest producer of crude in the region, Saudi Arabia, is estimated to suffer in 1986 revenue loss of about $ 8,000 million as against its revenue earnings of 1985, based on its higher OPEC production quota of 4.35 million barrels a day.

Kuwait and UAE are likely to suffer revenue lose of about $ 3,000 million each based on their production of 1.32 and 1.30 million B/D respectively. Qatar, with its production of 0.30 million B/D is estimated to loss revenue of about $ 1,600 million while Oman with its production of 0.55 million B/D is expected to lose about $ 2,500 million.

Oil's
Global
Shock

But hopes that the accord will last still hinge on the course of the six-year-old Iran-Iraq war and the actions of international oil companies, which are sitting on large stocks of oil accumulated over the summer.

Iran's oil exports have fallen by more than two-thirds to an average of 500,000 barrels a day beacause of Iraqi air strikes on vital oil installations, according to the authoritative weekly Middle East Economic Survey.

One of the worst affected is Oman, a sultanate on the southern edge of the Arabian peninsula. In less than about 20 days Oman's foreign revenues fell short by over 40 per cent, the country devalued its hitherto strong national currency, abandoned the ambitious economy development plan, halved budgetary expenditures and announced drastic austerity measures on an indefinite basis.

estimated at 42.13 million tonnes.

Refinery-wise this will be as follows:-

Indian Oil Corporation, Guwahati-0.74; IOC, Koyali — 2.89; IOC Haldia —2.63; IOC, Mathura — 6.00; Assam Oil Divn. — 0.52; Madras refineries 4.80; Cochin Refinery — 2.56; Bharat Petroleum Corporation — 6.12; Hindustan Petroleum Corpn. 4.17. Vaizag Refny — 3.29%; Bongaigaon Refinery and Petro Chemicals — 0.86.

Total 42.13 million tonnes.

Cooking Gas. The availability of liquid Petroleum Gas (LPG) is expected to increase from the 1984-85 level of 963,000 tonnes per annum to 1.8 million tonnes per annum by 1987-88. There are about 1 crore domestic users of LPG in the country. The Enrolment Programme and achievements against the target under Phase III Project are as follows:

Year	Target for enrolment	Achievement (in lakhs)
1982-83	14.00	14.10
1983-84	16.00	16.00
1984-85	14.50	15.00
1985-86	16.50	12.70 (upto Dec. '85)

The coal production in the country during April 1985 to February 1986 touched an all time high figure of 135.66 million tonnes, of which 117.41 m.t. come from Coal India mines and remaining from other coal producing sources. Production in the corresponding period of the previous year was 130.76 m.t. only. Thus, there has been a growth rate of 3.7% in the current year over the production recorded in the corresponding period of the previous year.

The year 1984-85 ended with a total coal production of 147.40 million tonnes. Considering the progress made till February of this year, it is reasonably expected that this year's total production will not only exceed that of last year by about 7 m.t. but will also set a new record by achieving the target of 154.50 m.t. fixed for the year.

Power Generation. The total energy generation in the country during 1984-85 was 156.63 billion units as compared with the generation programme of 154 billion units. The energy generation during 1984-85 registered a growth of 12.0% over 1983-84. The growth in thermal generation was 14.1% over 1983-84. The significant increase in thermal generation has been primarily on account of better performance of thermal power stations in the country, which achieved an average plant load factor of 50.1% during 1984-85 against the achievement of 47.9% PLF in 1983-84.

For the year 1985-86, a generation target of 170 billion units has been fixed comprising 110 billion units thermal, 4 billion units nuclear and 56 billion units hydro. This target envisages an increase of 8.5% over the actual generation in 1984-85.

The actual generation during the first 11.5 months as against the programme and corresponding achievement for the same period of 1984-85 are given below:

April '85-14th March 86

	Programme 1986	Actual 1986	Actual 1985
	MU	MU	MU
Thermal	104156	107968	93340
Nuclear	3830	4749	3812
Hydro	53632	48738	51685
Total	161618	161455	148837

Two Acts. The administration of Electric power (generation, transmission and distribution) is governed by two legislative enactments, the Indian Electricity Act 1910 and the Electricity (Supply) Act 1948

The Cenrtal Electricity Authority, established in 1950 under S.3(i) of the Electricity Supply Act, 1948 is responsible for evolving a long term power policy co-ordinating the activities of the Regional and State Electricity Boards and supervising the execution of all power projects in the country.

Regional Electricity Boards were set up in 1964 in each of the five regions to bring about voluntary co-operation between the states for developing regional grids and promoting coordinated operations of power systems.

The five Regional Electricity Boards are: Northern Regional Electricity Board covering Haryana, Himachal Pradesh, Chandigrah and Delhi; Western Regional Electricity Board covering Gujarat, Madhya Pradesh, Karnataka, Kerala, Tamil Nadu and Pondicherry; Estern Regional Electricity Board covering Bihar, Orissa, West Bengal, Sikkim and Damodar alley Corporation System; and North-Eastern Regional Electricity Board covering Assam, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh and Mizoram.

Boards. State Electricity Boards have been established in 18 out of the 22 states and they are mainly responsible for generation and distribution of electricity in their respective states. States in which Electricity Boards are yet to be established are Manipur, Tripura, Nagaland and Sikkim. In these states, the State Governments (and not Boards) have the responsibility for power development.

The pattern of power development in India is as follows. The states of Karnataka, Kerala, Punjab, Orissa and J and K develop mainly hydropower; Bihar, West Bengal, Gujarat and Rajasthan mainly thermal power; Maharashtra, Tamil Nadu, AP, UP, Assam and MP are partly thermal and partly hydro. The ultimate form of power supply will be an *All-India Grid* of interconnected hydro electric and thermal power stations in all the regions.

The all-India grid will be under the Super Grid Directorate in the Central Electricity Authority, which will co-ordinate the activities of the Regional Boards.

Thermal Stations. Coal is the largest naturally occurring source of commercial energy in India and is one of the principal sources of power production. At present, coal-based thermal plants contribute about 66.6 per cent of the total power generation.

Most of the thermal stations are coal-based. There are seven thermal stations which use oil. Gas is used only by two stations. The capacity of a thermal plant is determined by a number of factors, such as the need for annual maintenance of boiler, uniformity in load conditions, forced outages, etc. Thermal stations, in an interconnected system, may be expected on an average to generate 4500 G.W.A. per Kw.

Super Tankers Vanish

The giant super-tanker that dominated the world's oil-shipping lanes for a decade is becoming a fast vanishing species.

In shipyards and ports in Asia, some of the super tankers, often described as the "dinosaurs" of oil-shipping trade, are being cut into scrap to be fed into steel furnaces.

Some of the biggest oil-bearing tankers have been converted to storage vessels and are rolling listlessly at anchor off oil ports around the world.

The super-tanker is considered one of the "casualties" of the world-wide glut of oil, the resulting drop in oil prices and the opening of new oil fields that fundamentally changed the geography of petroleum transportation.

The new oil fields in Alaska, Mexico and the North Sea not only added to a growing world-wide glut of oil, but also shortened the petroleum supply lines because of their closeness to major oil-consuming markets in America and Europe. This struck a heavy blow to the economics of super-tankers, designed for the long voyages between Persian Gulf oil fields and refineries in Europe and Japan.

Nuclear power generation was initiated in India in 1969 with the commissioning of the Tarapur Atomic Power Station with an installed capacity of 420 MW. The following nuclear power stations are new ones:

Rajasthan Atomic Power Station (near Kota) (RAPS)	2 × 220 MW
Madras Atomic Power Station (near Kalpakam) (MAPS)	2 × 235
Narora Atomic Power Staion (UP) (NAPS)	2 ×235 MW

Coal, including lignite, comprises the largest single source of energy in India. It is estimated to contribute nearly two-thirds of India's total supply of commercial energy.

The coal reserves are now estimated at 120,105 million tonnes of which the Gondwana coal accounts for 1,19,211 million tonnes and the tertiary coal 894 million tonnes. The proved, probable and possible reserves account for 23 per cent, 37 per cent and 40 per cent of the reserves respectively. The state-wise assessment of reserves is as under:-

Mining Organization. Consequent on the nationalization of coal mining the Government of India re-organized the entire mining structure with the view of facilitating a rapid expansion of coal industry to meet the increasing demands of the country.

On Nov. 1, 1975 ***Coal India Ltd.*** was set up as a holding company with headquarters at Calcutta with five subsidiary companies, namely, ***Bharat Coking Coal Ltd., Cental Coalfields, Ltd., Western Coalfields, Ltd., Eastern Coalfields, Ltd., and Central Mine Planning and Design Institute Ltd.*** There are now one holding company and 4 coal producing companies and one subsidiary company, namely, CMPDIL, which is looking after the work of planning and design of mining projects.

Gondwana Coal	million tonnes
(a) West Bengal	29,759.18
(b) Bihar	50,489.97
(c) Madhya Pradesh	20,344.42
(d) Orissa	6,979.79
(e) Maharashta	3,015.20
(f) Andhra Pradesh	8,622.35
	1,19,210.91
Tertiary Coal	
(a) Arunachal Pradesh	91.00
(b) Assam	282.13
(c) Meghalaya	393.72
(d) Nagaland	12.05
	778.90
Grand Total	1,19,989.81

The authorised capital of Coal India ha been raised to Rs. 3000 crores.

Lignite. Lignite, also known as brown coal, though inferior to bituminous coal in calorific value, is used for generation of power and production of briquettes for domestic use. It is also used for production of urea.

The average calorific value of lignite is around 24,000 K Cal/kg. Though it has a high percentage of moisture (50 to 60 per cent), the ash content is low, 3-6 per cent.

Neyveli, a small village in the District of South Arcot of Tamil Nadu State, sprang into limelight overnight in the early 1950's when lignite was discovered. On investigation a reserve of 2000 million tonnes of lignite was estimated to be available at Neyveli. Further investigations were continued and as on date (1986) the estimated reserves extend to 3300 m.t.

Neyveli Lignite Corporation was registered as a public sector company in November 1956, with the object of taking over, implementing and managing the integrated project consisting of an opencast lignite mine with an ultimate capacity of 6.5 m.t. of lignite per annum, a 600 MW thermal power station a fertilizer plant with a rated capacity t produce 1.52 lakh tonnes of urea per year, a briquetting and carbonisation plant to produce 3.27 lakh tonnes of carbonised briquettes per annum and a clay washing plant wit a capacity of 6000 tonnes of washed clay pe annum.

Expected production of lignite in 1984–8 is 69 lakh tonnes. Actual production i 1984–85 (upto Dec. 1984): 52.21 lakh tonne

Oil and Gas. Although oil was disc vered in Assam in 1867, some seven yea after the first oil well in USA was opened Pennsylvania by Col. Drake, no effort wa made either to augment Assam production to enquire into its potentialities. It was only 1955 that the Government of India formed Directorate under the then Ministry of Nat ral Resources and Scientific Research investigate into the country's oil resource

In 1956 the Directorate was elevated to th status of a Commission. In 1959 the Comm sion was converted into a statutory body an Act of Parliament. This is the Oil a Natural Gas Commission.

The Oil and Natural Gas Commissi (ONGC) is the principal agency engaged the exploration, development and produ tion of crude oil and natural gas in t country. Its field of activity extends over t entire territory of India including the c tinental shelf. Some areas presently operat the Assam Oil Company and Oil India L are beyond the purview of the ONGC.

The ONGC produced 23.15 million ton (5.76 MMT onshore and 17.39 MMT offsho of crude oil and condensate during 1983–

World Oil Production

The world crude oil production dropped marginally to 2,777 million tonnes in 1985 from 2,827 million tonnes in the previous year after registering small increases in 1983 and 1984. The decline would have been more pronounced had not the members of the Organisation of Petroleum Exporting Countries decided in the second half of the year to step up output in an effort to improve their share of the world market. This had reached a peak in 1973 when the OPEC oil wells pumped out nearly 54 per cent of the world crude output of 3,251 million tonnes, a record till date.

With the nations outside the OPEC umbrella maximising effort towards oil exploration and conservation while simultaneously searching for alternative sources of energy, there had been a dramatic change in OPEC's market share with easier availability of crude oil from other sources.

There was, however, a marginal improvement in OPEC share to 30 per cent in 1985 from about 28 per cent in 1984, mainly because leading OPEC producers raise their output in the latter half of 1985, as stated above. Iran raised its share to 110 million tonnes from 109 million tonnes in 1984. United Arab Emirates to 60 million tonnes (56 million tonnes) Nigeria to 73 million tonnes (68 million tonnes) and Iraq to 70 million tonnes (59 million tonnes).

The largest producer Saudi Arabia reduced its production by 27.9 per cent to 165 million tonnes – a far cry from the record 510 million tonnes in 1979. Indonesia, Kuwait and Libya also produced less.

The Soviet Union remained the largest producer notwithstanding a drop in output to 595 million tonnes (613 million tonnes). The U.S. the second largest, raised its output to 492 million tonnes (488 million tonnes).

Among other producers outside the cartel, spectacular indeed has been the oil history of Britain. From an insignificant output in 1973, its energy sector underwent a metamorphic change with the advent of North Sea Oil. It produced 129 million tonnes of crude in 1985 as compared to 125 million tonnes in 1984 and 80 million tonnes at the beginning of the decade.

Another notable producer has been the People's Republic of China which stepped up its output by nearly 8.5 per cent to 125 million tonnes in 1985. Mexico cut marginally its share to 151 million tonnes. India is among the countries which increased their production (31 million tonnes as compared to 28 million tonnes).

During the same period the ONGC supplied 2223 million cubic metres of natural gas to various consumers.

Oil India Limited (OIL) was formed in February, 1959 for exploration and production of crude oil (including natural gas) in Assam and Arunachal Pradesh in collaboration with Burmah Oil Company Limited. With effect from 14th October 1981 the Government has taken over 50 per cent of shares of Oil India Limited held by Burmah Oil Company Limited and the Indian assets and Burmah Oil Company (India Trading Limited, for a total consideration of Rs. 21.56 crores.

With the takeover of the Assam Oil Company, the Burmah Oil Company (India Trading) Limited and 50 per cent shares of Oil India Limited (owned by Burmah Oil Company Limited) the oil industry in the country is entirely in public sector.

The Institute of Petroleum Exploration at Dehra Dun carries out basic and applied research in petroleum. They have identified 27 basins covering a total sedimentary area of about 1.4 million sq. km on land and about 0.26 million sq km offshore. The Brahmaputra Valley in Assam and Cambay in Gujarat have proved to be rich in oil and gas. The actual exploration is carried out by ONGC and Oil India both onshore and offshore.

Refining & Distribution. The total refining capacity in the country at present in terms of crude output is 37.80 million tonnes per annum. There are 12 refineries in operation. With the takeover of Digboi refinery of the Assam Oil Company on October 14, 1981 all the refineries are in the public sector.

The Indian Oil Corporation Limited was set up on September 1, 1964 by amalgamating the Indian Oil Company Limited to secure effective co-ordination and control between the refining and marketing activties of the two companies.

Bharat Petroleum Corporation Limited. The issued and subscribed share capital of the company is Rs. 23,00 crores and the paid up share capital Rs. 14.54 crores. All the shares are held by the Government of India.

Hindustan Petroleum Corportation Limited. The issued and subscribed share capital of Hindustan Petroleum Corporation Limited (HPCL) stands at Rs. 15.20 crores made up of 1,52,000 equity shares of Rs. 1000/- each.

Cooking Gas. LPG availability increased from 616,000 tonnes in 1982-83 to 750,000 tonnes in 1983-84, recording an increase of 20.7% over the previous year. During 1984-85 the availability of LPG is estimated to be 962,000 tonnes.

There are more than 80 lakh domestic users of LPG in the country. The enrolment programme and achievements against the target under the Phase III Project are as follows: (Figures in lakhs).

Year	Target	Actual
1982-83	14.00	14.10
1983-84	16.00	16.00
1984-85	14.50	11.83 (up to 31-12-84)
1985-86	17.50	—

Increasing use of LPG in the domestic sector results in the saving of valuable foreign exchange through reduced pressure on kersosene. Apart from the domestic sector, LPG is released for industrial use only on technological grounds, i.e., where no other fuel can be used.

INDUSTRIAL GROWTH POOR

India is an industrial giant among the developing countries. However our performance has not been bright in recent years. In 1985-86, the first year of the Seventh Plan, the index of industrial production could advance by only 6.3 per cent.

It is becoming increasingly clear that the growth target of 8.3 per cent set for the Seventh Plan will be missed for the year in succession.

It is evident that all is not well with the Indian industries. While the performance of India's private industrial sector has been exemplary, the vast array of public sector enterprises have been grossing up losses of billions of rupees over the years. Of late, the ideological dogmatism seems to have given way to pragmatism. It is too early to judge the outcome.

Mixed Economy. In the first flush of independence, India opted for a mixed economy. The industrial policy announced on 6th April 1948 envisaged an economy where public and private enterprises co-operated. The public sector reserved to itself monopoly rights in certain departments of industry like arms, atomic power, railway, transport, etc. Other fields were left open for the private sector.

The Industries (Development and Regulation) Act, 1951 made it obligatory for all new and existing industries and any substantia expansion and manufacture of new products by existing concerns to be licensed unde the Act.

Industries (Development and Regulation Amendment Act, 1984. The Industries (Development and Regulation) Act, 1951 has been amended to confer specific powers o the Central Government to define "Smal Scale Undertakings" and "Small Scale Ancillary Undertakings" and on the advice of a high level committee, to reserve specific items for exclusive production in such undertakings.

Socialist Pattern. In 1956 when th Congress Party decided to establish socialistic pattern of society in India, the 194 resolution was revised and a new policy wa announced on April 30, 1956. Under th policy, industries were divided into tw groups—Schedule A and Schedule B. Th industries in Schedule A would be entirely state-owned; those in Schedule B would progressively become state-owned. Non-scheduled industries were left to the Private Sector, but public enterprises were free to enter this sector, if and when the Government so chose.

In 1970 the whole gamut of industrial policy was overhauled. The licensing policy was drastically revised in July 1970. The object of the revision was to give effect to the recommendations of the Industrial Licensing Policy Inquiry Committee (The Dutt Committee) and the Monopolies Inquiry Commission. The new licensing policy sought "to assign definite roles and areas of operation to different categories of entrepreneurs."

Industrial production was divided into the *core sector* (basic and strategic industries), the *middle sector* and *delicensed sector*. The middle sector was divided into two categories, the *heavy investment sector* (with a capital of 5 crore or more) and the *light investment sector* (capital between one crore and 5 crore). All industries requiring less than one crore investment were classified as delicensed.

The revised policy also introduced the concept of a *joint sector* in industry in accordance with the recommendations of the Dutt Committee.

The Monopolies & Restrictive Trade Practices Act, 1969 was brought into force in June, 1970. The Act placed a number of restrictions on big units with a total capital of 20 crore or over, in regard to appointments of directors, expansion of business and amalgamations or mergers.

Janata Policy. The Industrial Policy of the Janata government was to be based on the agricultural economy. "The prosperity and the distribution of income arising from a broad-based growth of agriculture and related activities in the countryside have to provide the basic demand for a wide range of industries producing articles of consumption.

"It is only by such a process of reinforcing interaction of the agricultural and industrial sectors that employment can be found for the large numbers of the rural population who cannot be absorbed in the agricultural sector" the party declared.

THIRD GIANT

India is not doing so bad, after all, on the industrial scene. In a list prepared by "SOUTH" the Third World magazine, of the 600 largest companies in the Third World, India has the third position with 81 companies. South Korea and Brazil with 93 and 83 companies respectively came first and second. China has 11 entries, Pakistan 9 and Bangladesh 2.

The number of countries represented in the list is 48. The top ten countries and the number of companies are as under:

South Korea	:	93
Brazil	:	83
India	:	81
Mexico	:	34
Argentina	:	30
Malaysia	:	23
Saudi Arabia	:	20
Singapore	:	18
Taiwan	:	17
Hong Kong	:	17

In terms of turn over the top ten countries are:

Rank	Company	Country	Turn over (m US $)
1	Petroleos Mexicanos-Pemex	Mexico	20,873
2	CMC	China	20,853
3	Kuwait Petroleum Corpn.	Kuwait	14,900
4	Petroleos de Venezuela	Venezuela	12,723
5	Petramina	Indonesia	12,600
6	Nigerian National Petroleum Corp.	Nigeria	11,000
7	Sinochem	China	10,000
8	Petrobras	Brazil	9,693
9	Brega Oil Marketing	Libya	8,450
10	Indian Oil Corporation Ltd.	India	8,423

The 600th is Hannan Chemicals of South Korea (turn over US $122 million).

Liberalization. 1984-85 saw a number of steps by Government to liberalize industrial policy and streamline investment proce-

Birlas Win the Game

The inter se ranking on the basis of assets of large industrial houses has undergone a sea change in the 13-year period ended in 1984. In the process, the House of Tatas lost its asset leadership to Birlas.

The latest official study has revealed that the Tatas, who commanded the asset leadership till recently, was overtaken by Birlas and relegated to the second position at the end of 1984.

In 1972 and 1976, Tatas was on top of the ladder, while Birlas was in the second position. The status, however, changed in 1984 with the assets at the command of Birlas far exceeding Tatas, i.e. Rs. 3,359 crore against Rs. 3,120 crore.

The study also reveals that Reliance, which ranked 67 in 1976, staged a meteoric rise to reach the sixth position by 1984 holding total assets of Rs. 673 crore.

Of the 61 larger houses ranked as per their assets in 1984 (i.e. commanding Rs. 100 crore and above), nine houses which did not find their place in 1972 for the first time crossed the Rs. 100-crore level in 1984. They are Reliance, SPIC, Ahmedabad Electricity, Garware, Lohia, Essar Bulk Carrier and other undertakings which later diversified into 3 groups.

Conversely, the status of houses like ICI, Sriram and Scindias declined during these 13 years. The ICI which ranked fifth in 1972 came down to the 13th position in 1984, Shriram from 9th to 15th and Scindias from 10th to 38th.

Of the 61 houses, 10 industrial houses hailed from the southern region, mostly from Tamil Nadu. Among the ten the prime position is occupied by the TVS group, commanding a total asset of Rs. 387 crore and at the bottom is Madura Coats with Rs. 122 crore. Whereas the TVS occupied the 28th position in 1972, it improved to 19th rank by 1984. Ashok Leyland's position improved faster among all the ten companies from the 51st place it jumped to the 22nd position.

The 61 houses together commanded assets worth Rs. 23,990 crore or 72.7 per cent of the total assets of large sized companies in the country. The first ten of top 61 houses — Birlas, Tatas, JK Singhania, Mafatlal, Thapar, Reliance, Modi, ACC, Bangur and Larsen and Toubro — accounted for 44.8 per cent of the total assets of the large houses — Rs. 11,650 crore of the Rs. 23,990 crore.

Besides these 61 large houses, each having assets over Rs. 100 crore, there were also single large undertakings having assets over Rs. 100 crore at the end of 1984.

The top 24 companies their sales and their leaders are listed below:

	Name of the Company	Net sales (Rs. crore)	Chairman/M.D.
1.	Tata Iron and Steel	981.8	Russi Modi
2.	Tata Engineering	831.3	S. Moolgaokar
3.	Reliance Industries	604.3	Dhirubhai H. Ambani
4.	Hindustan Lever	538.6	A. S. Ganguly
5.	Delhi Cloth Mills	473.7	Bansi Dhar
6.	Associated Cement	455.8	N. A. Palkhivala
7.	Southern Petrochemicals	444.7	M. A. Chidambaram
8.	Gwalior Rayon	380.6	Aditya V. Birla
9.	Mahindra & Mahindra	368.3	Keshub Mahindra
10.	IEL	339.5	Dr. Satguru Sharan Baijal
11.	Larsen & Toubro	332.4	N. M. Desai
12.	Escorts	292.7	H. P. Nanda
13.	Voltas	292.4	A. H. Tobaccowala
14.	Brooke Bond	291.9	D. K. Basu
15.	Modi Rubber	280.7	Kedar Nath Modi
16.	Ambalal Sarabhai	276.9	Gautam Sarabhai
17.	Ashok Leyland	264.0	Mantosh Sondhi
18.	J. K. Synthetics	255.4	Dr. Gaur Hari Singhania
19.	Century Spinning	253.1	B. K. Birla
20.	Hindustan Motors	252.1	G. P. Birla
21.	Birla Jute	239.8	M. P. Birla
22.	Calcutta Electric	235.6	Bhasker Mitter
23.	Dunlop India	225.5	M. R. Chhabria
24.	Tata Power	225.0	Naval H. Tata

dures. Within the overall framework of the Industrial Policy Resolution of 1956, a growth-oriented approach continued to be the basic thrust of the industrial policy.

All these measures were tuned towards the removal of constraints on production and enhancing the level of capacity utilization, as well as raising productivity and imparting maximum speed to the process of growth in the industrial economy.

Industries (Development and Regulation) Act, 1951 continues to provide the necessary regulatory framework to ensure healthy and accelerated growth of the various constituents of the industrial sector. With a view to removing certain doubts about the power of the Central Government to reserve specific items for exclusive manufacture by small scale industries, the Act has been amended to empower the Central Government to reserve, on the advice of an Advisory Committee, items for small scale sector.

Broad-banding. With a view to providing flexibility to the manufacturers to adjust their product-mix according to the market demand and with a view to encouraging larger volume of production so as to secure the benefits of economies of scale, broad categorization of all types of two-wheelers and four-wheeled vehicles as well as paper and paper board has been brought about.

In order to ensure more expeditious disposal of licensing applications from MRTP companies, it has been decided to consider such applications simultaneously under the Industries (Development and Regulation) Act and the Monopolies and Restrictive Trade Practices Act. The objective stands further facilitated by combining the Department of Company Affairs with the Ministry of Industry.

The scheme for re-endorsement of capacity on the basis of the best production during the previous five years, extended during 1983-84, has been further extended to allow the benefit of increased production during 1984-85.

Self-employment. A scheme for self-employment for the educated unemployed youth, launched in August, 1983 continued during 1985-86.

Largest Technical Manpower, but...

India has the world's third largest reservoir of 2.5 million technical manpower, a chain of research institutes and universities and huge expenditures on R and D.

But there have failed to provide any results, according to Col. S. P. Wahi, Chairman of the Oil and Natural Gas Commission. Delivering the seventh Sir R. N. Mookerjee Memorial Lecture at Ahmedabad, Col. Wahi referred to the plus and minus of India's industrial strides.

Col. Wahi listed the framing of long-term policies for industrialisation, energy development and conservation, revamping of education and research patterns and controlling the population as the pre-requisites for taking the country with confidence to the next century.

He described the administrative and bureaucrative delays, lack of quality consciousness and the "will do" attitude as the biggest pitfalls on the way to progress.

Col. Wahi, who spoke on "Towards 21st century... role of engineers," said Indian engineers were in no way inferior to their counterparts in advanced nations as was evident from their positions held abroad and their performance anywhere in the world.

He pointed out that India was fortunate to have been provided a strong scientific and technological base by a visionary like Pandit Nehru.

He said the R and D units in the corporate sector should be run as profit-making centres so that scientists and engineers have the pressure to maintain time, quality and cost standards. The basic research for future needs should be left to educational and pure research institutions.

However, he said controlling the population within the framework of existing cultural, religious, political and socio-economic conditions was the greatest challenge facing the country now.

The General Index of Industrial Production registered a higher growth rate of 6.3% during April-November, 1985 compared to 6.6% growth achieved during April-November 1984.

The overall index which had been exhibiting a continuous rise from 164.6 in 1981 to 172.0 in 1982 and 179.7 in 1983, 193.0 in 1984 stood at the level of 203.7 in January-November, 1985. In fact, the index for each individual month of the period January-November, 1985 stood at a level higher than that of the corresponding months of 1984.

Growth Rate. The composite index of six infrastructure industries, viz, electricity, coal, saleable steel, petroleum refinery products, crude petroleum and cement together accounting for a weight of 23.3% in the General Index, recorded a rise of 7.6% during April-January, 1985-86. This is a fall from the 10.2% of 1984-85.

An analysis of growth of major industry groups in the manufacturing sector has shown that 15 groups with a weight of 81.1% registered a positive rate of growth during April-October, 1985 over April-October 1984. Further, analysis of provisional production data for 151 selected industries with a weight of 83.4% in the index indicates that 105 industries recorded a positive growth. Of these 47 industries registered a growth of more than 10% and 15 industries a growth of over 25%.

Despite the delicensing of 25 broad categories of industries and 82 bulk drugs and related formulation, the number of Letters of Intent increased from 1064 in 1984 to 1457 in 1985. The total value of capital goods cleared for import (by the main Capital Goods Committee) amounted to Rs. 747.03 crore in 1984 as against Rs. 713.47 crore in 1984.

Indian Steel 153% costlier

Steel Minister K. C. Pant told the Rajya Sabha on November 14, 1986 that steel prices in India were 153 per cent higher than international prices.

The demand for steel within the country exceeded indigenous production and, therefore, an exportable surplus was not available.

The main producers of steel were taking steps to reduce the cost of production by a variety of measures. However, taking into account the demand and availability position, a surplus was not likely to be available in the near future.

Public Sector undertakings achieved a growth of 22% by recording a turnover of Rs. 2518 crore in the period April-December 1985. This is over and above the compound growth rate of 18.5% achieved in the previous three years.

The financial performance of manufacturing public sector undertakings has also improved. The Engineering Units have shown both performance with increasing profits from 1981 onwards recording a profit of Rs. 55 crore in 1984-85. These units an anticipating an aggregate profit of the order of Rs. 70 crore in 1985-86.

However the non-engineering units incurred loses in 1983-84 and 1984-85. During 1984-85 the total loses amounted to Rs. 43 crore and the anticipated loss in 1985-86 is Rs. 55 crore.

The Seventh Plan outlay for Public Sector Industries is Rs. 6,80,000 crore. It is the highest ever provided for state sector. "This huge investment will help bring about the desired goal of socialist society which would provide equality of opportunity to all and ensure removal of disparity", hoped Prime Minister, Rajiv Gandhi in Lok Sabha while taking part in Plan discussions.

Industrial Licences. 1457 Letters of Intent and 985 Industrial Licences were issued during the year 1985.

Details of Letters of Intent Industrial Licences issued during the years 1980 to 1985 and the share of backward districts therein are given below:-

Letters of Intent			Industrial Licences	
Year	Total	Share of Backward Districts	Total	Share of Backward Districts
1980	946	415	475	147
1981	916	372	476	165
1982	1043	601	432	145
1983	1055	663	1075	317
1984	1064	627	905	323
1985	1457	774	985	427

The main areas of Foreign Collaboration approval during 1985 were as follows:-

Industry	No. of Approvals
(1) Electrical Equipment	205
(2) Industrial Machinery ...	152
(3) Chemicals (other than fertilizers) ...	69
(4) Ceramics ...	27
(5) Industrial Instruments ...	52
(6) Machine Tools ...	32
(7) Metallurgical Industries ...	53
(8) Other Industries ...	434
Total	1024*

* These figures include composite cases as well as proposals considered by Export-oriented Board, the Administrative Ministries under the delegated powers and Kandla Free Trade Zone Committee, Santacruz Electronics Exports Processing Zone.

The Country-wise distribution of Foreign Investment Approvals during 1985 is as follows:-

Country	Quantum of Investment (Rs. in lakh)
1. Austria	103.20
2. Bahamas	75.00
3. Bahrain	0.30
4. Belgium	268.00
5. Bermuda	40.00
6. Canada	247.00
7. Denmark	24.00
8. Fareo Island	8.00
9. F.R.G.	1180.80
10. France	235.50
11. Hongkong	5.00
12. Italy	694.75
13. Japan	1567.62
14. Jordan	5.00
15. Liberia	3.90
16. Mexico	4.00
17. Netherlands	40.00
18. Norway	650.00
19. Portugal	80.00
20. Singapore	37.00
21. Sri Lanka	11.00
22. Sweden	80.65
23. Switzerland	84.40
24. United Arab Emirates	871.42
25. USA	3992.49
26. UK	370.65
27. Non-Resident Indians	1904.01
Total	12586.69

A RECORD TRADE GAP

A wide gap of Rs. 8616.36 crore in India's import and export trade in 1985-1986 has caused great anxiety in the minds of the country's planners and financial experts. What has bothered the government is the decline that has taken place in exports despite devaluation.

Exports in 1985-86 amounted to Rs. 11,005.91 crore against the provisional figure of Rs. 11,297.38 crore in the previous year. The non-oil exports had shown a growth of over 11 per cent in rupee terms.

Commodities, which showed an increase in exports, are coffee, cereals, spices, marine products, iron-ore, leather and leather goods, gems and jewellery, textile (as a group) and petroleum products.

The commodities, which showed a decline in exports are tea, tobacco, engineering product and crude oil, according to an official release.

Imports. Imports during 1985-86 amounted to Rs. 19,622.27 crore against the provisional figure of Rs. 16,484.85 crore in the previous year, thus showing an increase of Rs. 3,137.42 crore.

Bulk imports (fertilisers, edible oil, sugar, petroleum and petroleum products, newsprint and non-ferrous metals) as a whole, showed an increase of Rs. 427 crore at Rs. 7,954 crore. There was a fall, however, in edible oil which amounted to Rs. 613.93 crore against Rs. 827.79 crore for the year 1984-85.

On the other hand, imports of crude oil and petroleum products taken together were virtually the same as in the previous year, even though Rs. 1,563 crore worth of oil was exported in 1984-85 and exports in 1985-86 were only Rs. 135 crore.

Manufactured fertilisers and non-ferrous metals showed a rise of Rs. 131.50 crore and Rs. 123.53 crore respectively.

Sharp Increase. There was a sharp increase in import of iron and steel which amounted to Rs. 1,214.63 crore in 1985-86 as compared with Rs. 732.69 crore in the previous year.

Import of machinery was higher by Rs. 889.22 crore at Rs. 3,469.49 crore. While machine tools showed a decline, all other categories, namely electrical machinery, non-electrical machinery (which includes electronics also), transport equipment (largely for assembling motor vehicles and two and three wheelers) recorded substantial increase.

There was a significant improvement in the balance of trade in the first quarter of 1986-87. Exports during this period amounted to Rs. 2,790.30 crore against Rs. 2,239.49 crore during the corresponding period in 1985-86, showing a growth of 24.6 per cent. On the other hand, imports during this period amounted to Rs. 4,414.16 crore against Rs. 4,348.59 crore during April-June 1985, registering a rise of 1.5 per cent.

Balance of Exchange. The concern being felt in the ministries of commerce and finance over the rise in its trade gap is understandable. But there is a view that the government should not look only at the rupee estimates of the country's foreign trade; it should also take a close look at the trade balance in foreign exchange. To begin with the rise in imports of 18 per cent between April and December must be offset against a fall in the value of rupee of just about 10 per cent between the first and last quarter of 1985 (against the currencies of 10 industrial countries that are India's chief trading partners).

Thus the real growth in the value of imports has been of the order of 8 per cent. If the imports for the year as a whole remain no more than 18 per cent higher than they were in 1984-85, the net growth will turn out to be even smaller. For by the end of March 1986, the rupee had been devalued by around 14 per cent in relation to January 1985.

What is disturbing however is that this has happened despite a sharp fall in the price of oil and no significant increase in the amount imported. In other words, the increase in imports or under other heads, has outstripped the not inconsiderable bonanza that India has received from the fall in the price of oil.

Devaluation. What should be bothering the government is the decline that has taken place in exports despite devaluation. These rose by 8.2 per cent in the first nine months of 1985-86 in rupee terms, but this amounts to a decrease in terms of foreign exchange earnings of more than 1.5 per cent. Over the year as a whole, if the present trend continues, non-oil exports will have fallen by six per cent if not more. This may mean that the steady devaluation of the rupee has not helped to close the trade gap, and that this is so because both India's exports and imports are inelastic. But, in all fairness, it must be conceded that nine months are too short a time for drawing any firm conclusions.

In 1984-85 India's rate of inflation has been barely three per cent, which is as low or lower than that of the industrialised countries. Thus there has been no erosion of its competitive strength on this account. A fifteen per cent devaluation should therefore result in a rise in exports earnings in the coming months. The government will therefore do well to halt the downward drift in the value of the rupee and await results. It would do well for the country to examine whether exports may not be better served by internal reforms such as a reduction in the prices of key inputs like steel, a lowering of indirect taxation, and the removal of bottlenecks to production and expansion such as the industrial licensing laws.

Rising Demand. The country is generally having adverse balance of trade owing to an increase in imports needed to meet the requirements of development accompanied by relatively slow growth of exports in the background of large domestic market with rising demand.

At times, there have been periods when India's foreign trade witnessed modest surpluses. In 1972-73, as a result of an appreciable increase in exports, the balance of trade turned into a favourable one for the first time in 26 years.

It was once again 1976-77 when India's trade was in surplus to the extent of Rs. 68.92 crore due to faster growth in the exports and a slight fall in imports. The subsequent years were marked by rising trade deficit. India's external trade and balance of payment situation has been under severe strains since 1979-80.

During this period, there has been a sharp increase in India's foreign trade deficit, chiefly on account of disproportionate rise in import bill in the wake of steep hike in world prices of major imports, particularly those of petroleum and petroleum products.

Weak Economy. The deficit of foreign trade which stood at Rs. 1,085 crore in 1978-79 increased to Rs. 2,724 crore in 1979-80 and to Rs. 5,838 crore in 1980-81. The growth of exports during 1980-81 was hampered by the poor performance of Indian economy in 1979-80 and the first half of 1980-81 under the effects of droughts, characterised by low production levels, lack of infra-structural facilities for export production and domestic inflation.

The resultant domestic shortages also necessitated higher imports of essential commodities which inflated the import bill. The international environment was also not conducive to growth of exports following world recession, prevalence of fluctuating exchange rate and new type of tariff, non-tariff and other protectionist measures followed by developed countries. However, as a result of various measures taken by the government in the direction of export production and export marketing, 1981-82 and 1982-83 showed distinct improvement in the performance of India's foreign trade.

The total turn-over of India's foreign trade (imports plus exports including re-exports) is steadily rising and it has more than doubled in the course of five years from a level of Rs. 11,428 crore in 1977-78 to Rs. 23,194 crore in 1982-83. The trade turn-over on provisional basis further increased to Rs. 24,743 crore in 1983-84.

Inland Trade of India is gigantic compared to which its foreign trade is small. However, no statistics about the total volume of inland trade is available. In 1947, the Planning Commission estimated that India's inland trade was about Rs. 7,000 crore whereas its foreign trade amounted to about Rs. 350 crore. If this proportion is any guide, the total value of India's internal trade today must be fantastic considering the expansion of its external trade.

A vast internal market is an advantage and a liability. The advantage is that there is a big home market to support large scale production, without fear of foreign competition. The liability is that domestic producers have to cater to the varied demands of a huge population. The advantage has been fully exploited, the liability has never been properly discharged. Once the home market was protected, the entrire country lay at the mercy of the domestic producers.

Domestic production (agricultural and industrial) failed the home market both in quantity and quality. Agricultural production depended on the weather and its ups and downs are unpredictable. But industry cannot claim any such alibi. Nevertheless, shortfalls in industrial production plagued the economy from time to time. Simultaneously quality suffered too. Shoddy goods filled the market.

Razor blades are a case in point. The import of blades was stopped in the fifties. Indian producers promptly came on the scene. They filled the country with blades which were no better than hacksaws but were priced at the standard rates. The blades improved slightly in course of time but still continued to give poor service. In May 1981, the government announced that new licenses for the manufacture of blades were being issued, even though the approved capacity was far in excess of the demand.

It is the persistent poor quality of the blades that prompted the government to take this unusual step. What is true of blades is true of almost every consumer article produced in India. The total result was that the common man found it difficult to obtain essential goods at reasonable prices. This is what led to the Essential Commodities Act, 1955 and to the formation of the Ministry of Civil Supplies in 1980.

Essential Commodities are goods declared as essential under the Essential Commodities Act, 1955. Under this Act the Government has powers to declare any commodity as essential, at any time. The list of essential commodities notified under the Act can be increased, reduced or altered from time to time according to the discretion of the Government. In 1980, 65 commodities stood listed as essential commodities under the Act.

Civil Supplies comprise articles of mass consumption, particularly the following Foodgrains, Vegetable oils, Sugar, Babyfoods, Drugs, Soap, Textiles, Matches, Kerosene and Diesel oil, Paper and Stationery, Cycle tyres and tubes, Soda ash, Dry cells or torches, Electric lamps, Hurricane lanterns, Milk, Foot-wear, Razor blades, Household utensils and Bicycles.

The Act was amended through legislation enacted in the 1981 monsoon session of the Parliament.

The amendment among other things provides for a summery trial of all offences under the Act, for a minimum mandatory imprisonment for a period not less than 3 months, making all offences under the Act non-bailable and barring appeals to a judicial authority.

Public Distribution. A public distribution system was found necessary because the free market system has been found wanting in protecting the interests of the low income consumers. The public agencies of the Central and State Governments are required to arrange for procurement, stocking and distributing of various essential commodities, through the approved outlets, to meet the requirements of the common man.

Public distribution systems is an integral part of the Plans and is being developed as such. The co-operatives are being organized to form the bulwark of the public distribution system. The cooperative distribution system of consumer articles comprises consumer cooperatives in urban areas and agricultural service and marketing cooperatives in rural areas. The consumer cooperative structure is a four-tier system comprising the National federation, State federations, central society at the district and primary society at the base levels.

Sustained efforts were made to strengthen the consumer cooperative network in the country in order to support the Public Distribution System. The Consumer Cooperatives in urban areas were oriented towards increasing coverage of weaker sections and achieving higher efficiency for greater consumer satisfaction by making available quality goods at reasonable prices.

Lower than the performance in 1980 the combined GDP growth of industrial countries slowed down from 1.5% in 1980 to 1% in 1981. The value of world trade in 1981 at nearly $ 2000 billion was 1% less than in 1980 and in volume terms the world trade in 1981 stagnated.

The improvement in India's foreign trade situation during 1982-83 was maintained during 1983-84, despite the recession in the world economy and the near stagnation in international trade flows.

ATOM FOR PEACE

Notwithstanding the political question whether India will make the atom bomb or not, the country is fast advancing in the field of nuclear energy development. Ever since the experimental nuclear explosion at Pokhran, Rajasthan, on May 18, 1974, the question of India going in for the bomb has been raised day in and day out by many around the world.

When US, Canada and France, the countries that co-operated with India in the nuclear field, made a hue and cry, there was no way other than India going it alone in the development of nuclear energy for peaceful purposes.

In the wake of Pakistan's all-out efforts to manufacture an 'Islamic bomb' and the super-secret developments at their nuclear research centre at Kahuta, off Islamabad, the bomb bogey became vociferous once again and the government leaders had to shout the political slogan that India would not hesitate to make the atomic bomb if it was compelled to do so.

However, Prime Minister Rajiv Gandhi while dedicting the three atomic reactors at Kalpakkam to the nation and renaming the research centre as '*Indira Gandhi Atomic Research Centre*', on Dec. 16, 1985, unequivocally declared, "our abhorrence of nuclear weapons for war is total."

A Milestone. India's nuclear programme has come of age. The formal dedication to the nation of the Fast Breeder Test Reactor (FBTR) at Kalpakkam marks a milestone in the building of an advanced and indigenous nuclear industry. The FBTR, coming in the wake of the recent commissioning of MAPP-1* and MAPP-II at Kalpakkam and the Dhruva research reactor at Trombay, implies that the troubles that plagued the nuclear programme in the 1970s are now well behind.

These recent successes have been achieved against great odds—political pressure and denial of technology by the big powers. It might be recalled that Canada broke its nuclear relationship with India and France refused to honour its commitments to the FBTR. The determination and self-confidence of the Indian scientific community in putting the nuclear programme back on the rails is only too obvious.

The Fast Breeder Test Reactor of Kalpakkam is entirely designed by Indian Scientists and uses locally-mixed carbide fuel with a plutonium and uranium base, instead of enriched uranium which the country has been obtaining from abroad with great difficulty.

There are only six countries— the United States, the Soviet Union, France, Britain, West Germany and Japan— that are ahead in fast breeder technology, which promises to be the main source of nuclear power in future.

From Monazite. The ultimate plan of Indian scientists is to use thorium. which can be extracted from monazite, radio active sand, as fuel, when fast breeder reactors go into commercial production.

Splitting of the plutonium atom provides the heat that is harnessed for electricity generation. Initially, the fast breeder reactor will run on low power to enable scientists to test various systems. Full power is likely to be reached some time in 1986.

The fast breder reactor is different from the conventional heavy water reactors. Plutonium is the fuel used in the reactors rather than natural uranium which is the staple for a heavy water reactor. The fast breeder reactor converts the non-fissile content of natural uranium fuel— the isotope of U-238— into plutonium.

13-year Search. The fast breeder reactor is a major milestone in the 13-year-long research and development of a technology which the nations possessing it were unwilling to divulge.

Though Inida did have the benefit of a French design when the construction of the fast breeder reactor started in 1972, a number of modifications and adaptations were carried out indigenously.

A major departure from the French design was the nature of the fuel itself.

The enriched uranium-plutonium oxide fuel that French experts used was unsuitable, for India did not have a fuel-enrichment facility. Therefore, Indian scientists opted for a plutonium carbide combination.

No other country has yet tested out a fuel core entirely made of the carbide and the performance of the fast breder test reactor is being watched with world-wide interest.

Dhruva Reactor. The Dhruva reactor at Tormbay which became critical in 1985 is another great achievement of India's nuclear programme for peaceful purposes. It is perhaps the only high power reactor in the world today. The main functions of this reactor are isotope production, fuel and materials testing and basic research in physics, chemistry and biology.

Beginning with Apsara commissioned in 1956, the Bhabha Atomic Research Centre (BARC) at Trombay has built four other nuclear research reactors and Dhruva is the fifth one— a 100 MW heavy water moderated and cooled thermal reactor designed and built in India.

Construction of the reactor was started on October 30, 1975, on the birth anniversary day of late Dr. Homi Bhabha, architct of India's nuclear programme.

Isotope production and dispensing form a large area of the BARC activity which has benefited the industry as well as the common man. In the area of medicine BARC labelled compounds and radiopharmaceuticals have been utilised in the diagnosis and treatment of diseases benefitting millions of people. The availability of isotopes from the reactors has given tremendous impetus to find new application in industry, in tracer technology and in medical sterilization.

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*MAPP- Madras Atomic Power Plant.

Bhabha's Day. The origin of India's nuclear power programme can be found in the speeches and writings of Homi Bhabha from around 1955 to the time of his untimely death in 1966.

The ideas of Bhabha got crystallized towards the late Fifties and early Sixties. In the Second Geneva Conference, he presented the conclusion that nuclear power was very important for the progress of the developing countries.

Two other ideas that have persisted in the formulation of India's nuclear power policy go back to Bhabha. The first one relates to the three – stage fuel cycle strategy that he propounded very early on. The three stages are natural uranium, heavy water reactors in the first stage followed by fast reactors using plutonium from the first stage reactors and depleted uranium or thorium in the blanket; and the third stage reactors employing the uranium 233— thorium cycle.

At the time Bhabha formulated this strategy, many aspects of the technology of fast breeder reactors, reprocessing and recycling of plutonium were only vaguely understood. Clearly this was very much a case of crystal gazing. It is remarkable that the basic elements of this strategy enunciated almost 30 years ago have remained essentially valid.

The roles of fast reactors, fuel reprocessing and recycling plutonium were recognized very early on. Consequently these programmes were pursued vigorously even as the country was coming to grips with the real problems of the first phase of the nuclear power programme.

Self-Reliance. The second idea that Bhabha injected into the programme was the need to develop self-reliant capability.

It was with this objective that manufacture of equipment for nuclear power plant within the country was taken up right from the early days of the programme. Even when General Electric Company of the U. S. was to supply the entire Tarapur Atomic Power Station on a turnkey type contract, it was obligated to get the control and instrumentation panels fabricated by the group concerned in Trombay. It was the same spirit that led to the decision to make in India half the initial charge of fuel (uranium dioxide pellets clad in zircalloy) even for the first heavy water reactor at Rajasthan.

Economic. Although the calculations revealed nuclear power to be economic in load centre locations (away from coal mines), there were many sceptics who did not believe these calculations. In fact when Jawaharlal Nehru was clearing the decision to go ahead with the first nuclear power plant, he asserted that while the economic calculations of Bhabha were impressive, they were only of secondary importance as the country had to go in for this new technology in its longterm interest. As it turned out, the Tarapur station has, over the last 16 years, supplied the lowest cost non-hydro electric power and has also created a sizable financial surplus.

This issue surfaced in a recent discussion regarding the economic viability of the sixth nuclear power station coming up at Kaiga in Karnataka. While the Madras Atomic Power Station is selling power at 42 paise per Kwh, the recently completed Raichur thermal station is expected sell power at 75 paise.

For 2000 AD. The target of 10,000 MW of nuclear power by 2000 AD calls for industrializing what up to now has been a prototypical activity. The wide ranging activities hitherto have created a sound base of trained manpower and good industrial potential. It will be necessary to devise appropriate managerial systyems whereby large construction activities at a number of sites can progress according to plans, manufacture of components at a number of shops can keep progressing without impediments and the engineering decisions required both for site work and manufacturing are made without delay.

In addition, the operating nuclear power plants should perform at high capacity factors and in a profitable manner, with proper control on operating expenses. There are other important matters of manpower training, industrial relations and public education. The Nuclear Power Board is gearing itself to address these and other questions and is confident of establishing a successful nuclear power industry in the country.

Future Programmes. Tarapur is one of the sites being considered for setting up a 500 MW atomic power station. The proposed nuclear unit likely to be commissioned by 1985, has made good progress.

The country had made substantial progress in designing and mechanised construction techniques for nuclear power station erection and soon it would be possible to build an atomic unit in seven years time, as aganist eight years at present.

The nuclear power units were "quite safe" for generation of large quantities of power and the government was encouraging manufacture of components and instruments for atomic stations. At least 90 per çent of the components at the Kalpakkam station near Madras were made indigenously.

Erection of two units of 235 MW each was on at Kaiga in Karwar region of Karnataka. Work on nuclear units was also apace at Narora in Uttar Pradesh and Kakrapar in South Gujarat.

Once industrial capacity was built up for a programme of 10,000 MW, a stage of maturity would be reached which would permit a more rapid acceleration of nuclear power capacity.

DEFENCE

Since the days of border wars India has gone all out to build up her armed forces. Today India is having one of the largest military forces in the world with an army of nearly one million personnel. Indian Air Force is 1,13,000 strong and her Navy has 47,000 men.

The authority of the Supreme Commander of the Armed forces is vested in the President of India. Responsibility for national defence, however, rests with the cabinet. All important issues having a bearing on defence are decided by the Cabinet Committee on Political Affairs which is presided over by the Prime Minister. The Defence Minister is responsible to the Parliament for all matters concerning the Defence Services.

The direct responsibility for operational and administrative control of the Armed Forces is that of the Ministry of Defence and the three Armed Forces Headquarters of Army, Navy and Air Force. The Ministry of Defence acts as the central agency for controlling and coordinating the development of the three services, for conveying the policy decisions of the Government of India to the three Services Headquarters for implementation and for obtaining financial sanction from parliament for defence expenditure.

Ministry of Defence. The Ministry of Defence is headed by the Minister of Defence who is of Cabinet rank. He is assisted either by Ministers of State for Defence or Deputy Defence Ministers. The Chief financial authority is the financial adviser to the Ministry of Defence. The Defence Ministry comprises four departments: (i) Department of Defence. (ii) Department of Defence Production. (iii) Department of Defence Supplies. (iv) Department of Defence Science and Research.

The Ministry is directly responsible for defence of India, provisioning and administration of the Armed Forces, viz. Army, Navy and Air Force, procurement of arms, weapons, ammunitions, ships, aircraft, vehicles, equipment and items of logistic support required by the Armed forces, the location and creation of indigenous capacity for production of hitherto imported items; and promotion of research and development in the field of defence.

Control of civilian services attached to the Ministry, formation of cantonments and delineation of their areas and regulation of housing accommodation for defence services personnel are among the other responsibilities of the ministry.

The main auxiliaries are: (i) The territorial Army; (ii) Coast guards; (iii) Auxiliary Air Force; (iv) National Cadet Corps comprising wings of the Army, Navy and Air Force.

Huge Expenditure. Considering the size of the country, its very long borders and coastline, and also the strategic position it occupies in South Asia and the Indian Ocean, India has to maintain comparatively large defence forces. Today India is reported to have the fourth largest Army in the world, the fifth largest air force and the seventh largest navy. India's defence outlay has steadily increased from Rs. 806 crore in 1964-65 to nearly 8 times that figure (Rs. 6800 crore) today.

Chief of Staff: The Armed Forces consists of the three main services, The Army, the Navy and the Air Force, each of which is headed by their respective Chief of Staff viz., the Chief of the Army Staff, The Chief of Naval Staff and the Chief of Air Staff who are of the rank of General and equivalent. These three chiefs of staff constitute the chiefs of staff committee, the chairmanship of which rotates between the three service chiefs according to seniority. The Committee is assisted by sub-committees dealing with specific problems such as planning, training, communication, etc.

Army. The Army Headquarters are located in New Delhi. The Chief of the Army Staff is assisted by the following principal staff officers: (i) Vice Chief of Army Staff; (ii) Deputy Chief of Army Staff; (iii) Adjutant General; (iv) Quartermaster General; (v) Master-General of Ordnance; (vi) Military Secretary; (vii) Engineer-in-Chief.

The Army is organised into the following Commands: (i) Western; (ii) Eastern; (iii) Northern; (iv) Southern; (v) Central.

Each Command is commanded by a General Officer Commanding in Chief of the rank of Lieutenant General. The Command is further divided into Areas, Independent sub-Areas and Sub-areas, commanded by a Major General and Brigadiers respectively.

The Army consists of a number of arms and services. These are: (i) The President's Body Guard; (ii) Armoured Corps; (iii) Regiment of Artillery; (iv) Corps of Engineers; (v) corps of Signals; (vi) Military Nursing Service; (vii) Army Medical Corps; (viii) Corps of Electrical and Mechanical Engineers; (ix) Remount & Veterinary Corps; (x) Military Farm Services; (xi) Army Education Corps; (xii) Intelligence Corps; (xiii) Corps of Military Police; (xiv) Army Physical Training Corps; (xv) Pioneer Corps; (xvi) Army Postal Service Corps; (xvii) Defence Security Corps.

Territorial Army. The Territorial Army is a voluntary part-time citizens' force consisting of persons who are not professional soldiers but civilians who are eager to play a role in the defence of the country. All Indian nationals between 18 and 35 years of age are eligible to join it. The T.A. comprises infantry, engineering and medical units.

National Cadet Corps. NCC is a youth organization, open to students of academic institutions. It aims at development of leadership qualities, character and spirit o sportsmanship, cooperation and service. It is a voluntary organization and neither officers nor cadets are under any obligation or compulsion to enter active military service

NCC consists of 3 divisions, Senior, Junior and Girls with Army, Navy and Air Wings The authorized strength of the senior division is 4 lakh, Junior Division 7 lakh and girls 62,000 among the three wings of the Armed Forces.

Navy. The Headquarters of the Navy is located in New Delhi. The Chief of Naval Staff is assisted by the following principal staff officers:

(i) Vice Chief of Naval Staff; (ii) Chief of Material; (iii) Deputy Chief of Naval Staff; (iv Chief of Personnel; (v) Controller of Warship Production and Acquisition; (vi) Chief of Logistics.

The Navy has three Naval commands commanded by Flag Officers Commanding-in-Chief of the rank of Vice Admiral. They are: (i) Western Naval Command at Bombay (ii) Eastern Naval Command at Vishakhapatnam; (iii) Southern Naval Command at Cochin.

There are two fleets, the Western and the Eastern, commanded by Flag Officers Commanding, of the rank of Vice-Rear Admiral

Sub-Continental Military Balance*

	Pakistan	*India*	*Bangladesh*
ARMY	*450,000*	*960,000*	*73,000*
Corps	*7*	*8*	—
Armoured Divisions	*2*	*2*	—
Mechanised Divisions	—	*1*	—
Infantry Divisions	*16*	*18*	*5*
Independent Armoured Brigades	*4*	*5*	*1*
Independent Infantry Brigades	*5*	*7*	*12*
Para Brigade	—	*1*	—
Independent Arty. Brigades	*7*	*17*	*2*
Mountain Divisions	—	*10*	—
NAVY	*11,000*	*47,000*	*5,300*
Submarines	*6*	*8*	—
Midget Submarine	*5*	—	—
Aircraft Carrier	—	*1*	—
Destroyers	*8*	*3*	—
Frigates	—	*21*	*3*
Corvettes	—	*3*	—
Missile Boats/FAC	*24*	*16*	*22*
Patrol Craft	*20*	*6*	*9*
Mine sweepers	*3*	*16*	—
Landing Ships	—	*6*	—
Fleet Tankers	*1*	*2*	—
Air Force	*17,600*	*113,000*	*3,000*
Combat Aircraft	*314*	*920*	*27*
Combat Squadrons	*18*	*39*	*3*
Transport Squadrons	*2*	*9*	*1*
Helicopter Squadrons	*2*	*14*	*1*

* 1984-85 figures based largely on materials from the International Institute of Strategic Studies, London

There are also Flag Officers commanding Goa Area, Andaman & Nicobar Islands. In addition, there are Naval Officers-in-charge of Bombay, Madras, Calcutta.

The Fleets. The two fleets consist of the aircraft carrier INS Vikrant, a number of frigate squadrons comprising modern anti-aircraft, anti-submarine and general purpose ships, missile equipped frigates/destroyers, a squadron of anti-submarine patrol vessels, several mine sweeping squadrons, submarines, a submarine depot ship, a submarine rescue vessel, landing ships capable of carrying tanks and personnel, and several fast attack craft carrying surface-to-surface missiles. In addition there are survey ships, survey craft, fleet tankers and a number of auxiliary craft such as tugs and mooring vessels. The survey units of the Navy carry out surveys of India's coast and surrounding waters, approaches to harbours, etc.

A naval organization functions at Port Blair to ensure the security of the Bay Islands.

The Navy took over the responsibility of Maritime Reconnaissance from the IAF and has acquired suitable MR aircraft for the purpose.

The navy has a sizeable Air arm with various types of fixed wing aircraft and helicopters such as Super Constellation, IR-38, Alizes, Sea Harriers, Islanders, Sea Kings, Alsutter and KA-25. These are used in various roles such as maritime reconnaissance, anti-submarine work, search and res-

Commissioned Ranks

Army	*Navy*	*Air Force*
Field Marshal	*Admiral of the Fleet*	*Marshal of the Air Force*
General	*Admiral*	*Air Chief Marshal*
Lieut. General	*Vice Admiral*	*Air Marshal*
Major General	*Rear Admiral*	*Air Vice Marshal*
Brigadier	*Commodore*	*Air Commodore*
Colonel	*Captain*	*Group Captain*
Lieut Colonel	*Commander*	*Wing Commander*
Major	*Lieut. Commander*	*Squadron Leader*
Captain	*Lieutenant*	*Flight Lieutenant*
Lieutenant	*Sub. Lieutenant*	*Flying Officer*
Second Lieutenant	*Acting Sub. Lieutenant*	*Pilot Officer*

cue, logistic functions such as lifting troops and supplies, air interception, ground support and anti-shipping.

Building Gun Ships. Since 1964, India has developed considerably in building her own ships. At present a number of ships, submarines and smaller craft are under construction for the navy at yards such as Mazagaon Docks Ltd, at Bombay, Garden Reach Shipbuilders at Calcutta and Goa Shipyard.

Six Leander class frigates, INS Nilgiri, Himgiri, Udaygiri, Dunagiri, Taragiri, Vindhyagiri, one ship of indigenous design INS Godavari, two survey ships INS Sandlayak and Nirdeshak, seaward Defence boats, Harbour utility and ocean going tugs a mooring vessel and patrol craft have been built and commissioned.

The addition of three general purpose, missile carrying destroyers have added considerably to the operational efficiency of the Navy.

Coast Guard. The Coast Guard forms a part of the Defence Ministry. Its headquarters are at New Delhi and is headed by a Director General. It has three regional headquarters at Bombay (Western region), Madras (Southern region) and Port Blair (Andaman and Nicobar).

The main duties of the Coast Guard are protection of coastal and offshore installations and terminals, protection of fisheries, patrol of the Exclusive Economic Zone to prevent poaching, anti-smuggling work, and search and rescue missions.

Although the Coast Guard initially comprised almost entirely of ships of the Navy and personnel on deputation, today the personnel of Coast Guard are mostly recruited directly and ships are built either in Indian shipbuilding yards or purchased from abroad.

The coast guard fleet comprises ships such as KUTHAR (ex-navy), VIKRAM, VIJAY, VEERA (indigenously built), a number of offshore patrol vessels and a number of inshore patrol vessels.

Air Force. The Air Force is organised into five operational Commands and two support Commands. These are:

(i) Western Air Command; (ii) Eastern Air Command; (iii) Southern Air Command; (iv) Central Air Command; (v) South Western Air Command; (vi) Training Command; (vii) Maintenance Command.

The Air Headquarters is located in New Delhi. The Chief of Air Staff is assisted by the following Principal Staff Officers:

(i) Vice Chief of Air Staff; (ii) Deputy Chief of Air Staff; (iii) Air Officer in Charge, Administration; (iv) Air Officer in Charge, Personnel; (v) Air Officer in Charge, Maintenance.

At the time of partition in 1947, India's share of the Air Force was less than 10 full squadrons. Today there are more than 50 squadrons comprising combat, transport, liaison and reconnaissance aircraft/helicopters. There are more than 1000 aircraft and helicopters of which the main types are Camberra, Hunter, Ajeet, Kiran, Chetak, Mig-21/- 23/- 25, Sec-7, An-32, Il-76, Mi-8, Jaguar and Mirage-2000. In addition to purchases from abroad, India also designs and makes her own aircraft. The rapid development of the IAF has resulted in a well balanced force comprising modern aircraft with state-of-the-art equipment and all-weather capability. The IAF has a complete range of weaponry including infra-red and radar homing missiles which can be fired day or night with utmost accuracy.

Common Services. In matters like medical services, public relations, etc., which are common to all three services, they are served by ***Inter-Service Organizations*** which function directly under the Ministry of Defence. Some such important organizations are:

(1) Armed Forces Film and Photo Division, (2) Armed Forces Medical Services, (3) Defence Lands and Cantonments, (4) Directorate of Public Relations, (5) Historical Section, (6) Joint Cipher Bureau, (7) Ministry of Defence Library, (8) National Defence College, (9) Services Sports Control Board, (10) Videshi Bhasha Vidyalaya.

Some of the noteworthy inter-service training establishments are: (1) Institute of Defence Management, (2) Institute of Armament Technology, (3) Defence Services Staff College, (4) National Defence Academy.

Armed Forces Medical Services: Comprise Army Medical Corps, Army Dental Corps and Military Nursing Service under the overall control of Director General, Armed Forces Medical Services.

Armed Forces Medical College, Pune: Trains civilian candidates for the MBBS course of Pune University. 100 boys and 20 girls are admitted every year. Candidates who receive stipends number 60. Such candidates have to serve as Permanent Commissioned officers. Others may serve only 7 years. Post-graduate specialization courses are also provided at Pune. Training in medical problems peculiar to aviators is given at the Institute of Aviation Medicine at Bangalore, and those peculiar to Navy such as those special to divers and submarines, at the Institute of Naval Medicine, Bombay.

Cantonments. These were established under the cantonments Act, 1924, with the purpose of accommodating Armed Forces personnel and safeguarding their health, welfare and security. Since the cantonments had a significant civilian population, it was found necessary to provide for local self-government of those areas.

The Cantonment Boards formed under the Cantonments Act 1924, look after the municipal administration in their areas under the central government. These boards are responsible for providing civil services to the community and for looking after their welfare. There are 62 cantonments in India.

Defence Production. The Defence production activities are broadly divided into two groups viz. departmentally run Ordnance Factories and Defence Public Sector undertakings, whereas the arms, ammunition, tanks, vehicles, etc. are made in the Ordnance Factories, the Defence public sector undertakings are geared to produce

Defence Production Results

(Rupees in Crore)

	1983-84	*1984-85*	*1985-86 (estimated)*
Value of Production	*1418.85*	*1685.58*	*1781.40*
Turnover	*1119.66*	*1350.61*	*1795.52*
Profit before Tax	*91.57*	*98.10*	*108.70*
Return on turnover	*7.69*	*7.26*	*6.34*

ships, submarines, aircraft, earthmoving equipment, machine tools, missiles, sensors, communication equipment, etc. The Ordnance Factories and Defence PSU's have an ongoing programme of indigenisation.

Public Sector Undertakings. There are presently 9 PSUs under the administrative control of the Ministry of Defence (Department of Defence Production). Out of them eight PSUs are in production making the aforementioned equipment. They are:

(1) Hindustan Aeronautics Ltd. (HAL), (2) Bharat Electronics Ltd. (BEL), (3) Bharat Earth Movers Ltd. (BEML), (4) Mazagaon Docts Ltd. (MDL), (5) Garden Reach Shipbuilders and Engineers Ltd. (GRSE), (6) Goa Shipyards Ltd. (GSL), (7) Praga Tools Ltd. (PTL), (8) Bharat Dynamics Ltd. (BDL).

The ninth PSU, Mishra Dhatu Nigam Ltd. (MDNL or "Midhani") manufactures the special alloys and metals required by aeronautics, space and electronics industries.

The nine Defence PSUs have a total work force of 97,522 out of which HAL has the maximum (40,470) and MDNL has the least (1070).

Research & Development. The R & D activities are carried out in 35 main laboratories/establishments and a few field units located in different parts of the country. The organisation is headed by the Directo General, Research & Development (DGR & D) who is also the Secretary to the Govt. fo Defence Research. He is assisted by three chief controllers.

FOOD FRONT BRIGHT

India's agricultural growth from the days of the begging bowl to the days of philanthropy has been phenomenal. The Green Revolution brought about by scientific methods of cultivation helped her not only to brave the ravages of flood and drought but also to offer food aid to the less fortunate masses in Asia and Africa.

Food grains production during 1983-84 pierced the barrier of 130-133 million tonnes in the previous four years and reached an all-time peak of 152.40 million tonnes, marking an increase of about 22 million tonnes or 17 per cent over the production level of the previous year.

Record Production. The record foodgrain production of 152.4 million tonnes during 1983-84 was a signal achievement for India, receiving world-wide acclaim. What is particularly notable is that while the first *Green Revolution* of 1967-68 arose from introduction of new high yielding varieties of Mexican wheat and dwarf rice varieties evolved by the International Rice Research Institute, the spectacular increase in production during 1983-84 was mainly owing to organized input management. The provisional figure for 1984-85 is 146.2 in tonnes.

The year 1983-84 could thus be termed as the *Second Green Revolution* showing a massive increase in production through expansion in supplies of inputs and services to the farmers, extension and better management. As compared to the previous year the increase in 1983-84 in the distribution o seed, fertiliser and pesticides showed marked increase. The expansion in th provision of institutional credit for agricultur was also encouraging.

The highly notable and encouraging fea ture of this second Green Revolution is th whereas the first Green Revolution of 1967-6 was confined mainly to a few progressiv areas of Punjab, Haryana and West U.P., th second Green Revolution of 1983-84 ha witnessed tremendous progress in Easter and Central States including West Benga Bihar, Orissa, Madhya Pradesh and U. where the growth rates had been relative slow

The overall growth in agricultural produc tion had a very salutary effect on the ec nomy. Supplies of rice, wheat and othe cereals have been in abundance and th prices have been ruling mostly at a lowe level than last year. Procurement of rice ar wheat touched a new peak and the stocks foodgrains also reached a record level.

Principal Crops

Likely Production 1985-86

1. Food Grains, Million Tons	
Rice	61.5–62.0
Wheat	46.5–47.0
Maize and Millets	26.0–27.0
Pulses	12.0–12.5
Kharif Foodgrains	82.5–84.0
Rabi Foodgrains	63.5–64.5
Total Foodgrains	146.0–148.5
2. Oil Seeds	
Groundnut	5.2
Rapseed & Mustard	3.2
Soyabean	1.0
Kharif Oil seeds	5.7
Rabi Oil seeds	5.9
Total Oil seeds	11.6
3. Other Crops	
Sugarcane	175.0
Cotton (Million bales)	8.5
Jute & Mesta (Million bales)	11.4

Tempo Maintained. During 1984-85, the tempo of agricultural development was maintained despite lack of rains in some rainfed areas. Although the onset of south-west monsoon was generally in time, the precipitation was uneven and erratic in many areas, and parts of West Bengal, Bihar and Orissa were affected by excessive rains during the last week of June, 1984. In Punjab, Haryana and Uttar Pradesh, the monsoon was erratic and insufficient since May-July.

The situation further worsened due to power shortage and breach in Bhakra Main Line Canal. Moisture stress, which delayed paddy transplantation in some States, also affected groundnut crop in Saurashtra. Wide-spread rains in the second half of August, however, made up the deficiency to a considerable extent.

The overall post-monsoon deficiency in rainfall during the period October-December, 1984 has been termed as the worst since 1980. Twentythree Sub-Divisions had defi-

World Cereal Output Falls

World cereal production may fall by 17 million tonnes during 1986 according to the latest FAO forecast made in October, 1986. Compared with 1985, while wheat and rice output is expected to increase by 3 and 9 million tonnes respectively, it is the coarse grains which show a major fall of 29 million tonnes in the current year.

Despite the fall in total cereal production, world carryover stocks of cereals are likely to increase by 37 million tonnes reaching the level of 431 million tonnes in 1987 as against 394 million tonnes in 1986.

Ending stocks in wheat and coarse grains are likely to go up by 4 and 35 million tonnes respectively while there will be a shortfall of 2 million tonnes in rice.

The total cereal trade is estimated to be higher during 1986-87. The FAO forecast shows that imports of wheat and coarse grains will increase by 3 and 5 million tonnes respectively while the trade in rice may remain more or less at the 1985-86 level. Both the developing and developed countries are estimated to increase their imports by 2 and 6 million tonnes in 1986-87 compared with 1985-86.

World Cereals

	1985	1986	1987
	(Million tonnes)		
Production			
Wheat	*510*	*513*	—
Coarse grains	*861*	*832*	—
Rice (paddy)	*466*	*475*	
Total	*1837*	*1820*	—
Stocks			
Wheat	—	*150*	*154*
Coarse grains	—	*193*	*228*
Rice (milled)	—	*51*	*49*
Total	—	*394*	*431*
World imports			
Wheat	—	*86.0*	*89.0*
Coarse grains	—	*84.8*	*90.0*
Rice	—	*11.8*	*11.8*
Total	—	*182.6*	*190.8*

Source: FAO

Pepper fetches Record Price

Pepper prices touched an all-time record in India by the end of 1986.

Spot garbled pepper was quoted at Rs. 6,275 per quintal when ungarbled fetched Rs. 6,200 per quintal. The ungarbled grade had even touched the Rs. 6,250 per quintal.

Prices in the futures section had also shot up phenomenally. The quotation for October and December contracts were put at Rs. 6,020 and Rs. 5,940 per quintal.

Market sources feel that the poor arrivals and the heavy demand had acted together in pushing the prices up. Of late, the United States had been evincing keen interest in purchasing the new season pepper from India. There are also enquiries from Rumania, and European countries.

World consumption of pepper is about 1.23 lakh tonnes a year.

The new Indian pepper crop is expected to come into the market by early December and the arrival will be at its peak till March/April.

Besides India, Indonesia, Malaysia and Brazil are the three other main suppliers of pepper to world markets.

The shortfall in pepper production in Indonesia, Malaysia and Brazil was met during 1985/86 season by India by exporting over 55,000 tonnes of its all time mumber crop of 65,000 tonnes, trade sources said.

India's normal annual pepper production is about 40,000 tonnes and exports about 25,000 tonnes.

cient rainfall during the post-monsoon period. This deficiency caused considerable precipitation stress in the major rabi growing States of Haryana, Punjab, U.P., Rajasthan, Gujarat and Bihar plains. However, about 70% of the wheat crops were being sown in the areas with irrigation facilities, and thus there was not much damage to the wheat crop. In the country as a whole, the prospects of rabi harvests were quite encouraging.

The Seventh Five-Year Plan has thus taken off from a happy setting. As in the previous Plans, Agriculture which is the source of livelihood of the overwhelming majority of our people would be given the highest priority keeping in view the thrust of the Seventh Five-Year Plan on food production, productivity and employment as recommended by the National Development Council. With the coming together of the Departments of Agriculture and Cooperation, Agricultural Research and Education and Rural Development under the same Ministry, the complete complementality between agriculture and rural development could be more fully exploited for food production, productivity and employment.

Fertilizers. There has been a three-fold increase in the consumption of fertilizers during the last decade since 1975-76. During the Sixth Plan period, the consumption of fertilizers has increased at the rate of more than 6 lakh tonnes per annum on an average from the base level of 52.6 lakh tonnes in 1979-80 to 82 lakh tonnes in 1984-85. In 1985-86 it is likely to be of ten order of 90 lakh tonnes.

In the last two years of the Sixth Plan, there has been a phenomenal growth in fertilizer use, the percentage increase in 1983-84 being 20.6 over the previous year. During kharif 1984 (April-September), the consumption of fertilizer is estimated to be of the order of 38.00 lakh tonnes against 32.23 lakh tonnes in the same period in the previous year implying thereby an increase of more than 22 per cent.

India has come to occupy the fourth position in the world in terms of gross fertiliser consumption next only to U.S.A. U.S.S.R. and China. The per unit area consumption in India has also increased around three times during the last decade. But, in terms of this yardstick, India is still far behind the rest of the world and ranks among the bottom half of the countries.

Cooperatives constitute the major institutional agency for supporting agricultura programmes. The total agricultural cred disbursed by the cooperatives reached a level of Rs. 3250 crore in 1984-85. Similarly the value of a wide variety of agricultura produce marketed by the cooperatives wa rly Rs. 3032 crore in 1984-85.

n the field of fertilizer manufacture, the ian Farmers Fertilizer Cooperative Ltd. FCO) accounted for 13 per cent of the ogenous fertilizer production and 26 per t of the phosphatic fertilizer production in country during 1984-85. About 70,000 perative retail outlets distributed fertiliz- estimated at 33.75 lakh tonnes of NPK resenting about 43.7 per cent of the total ilizer distribution in the country. The perative sector accounted for 59 per cent he national sugar production in 1985-86.

griculture which accounts for about 48 cent of the national income is the kingpin the national economy. It dominates the onal scene.

griculture, in its turn, is dominated by dcrops. As much as 75 per cent of the total pped area is taken up by foodcrops. Both dition and necessity have contributed to pre-eminence of foodcrops in the ntry.

rops and Seasons. There are two n crops seasons in India, the *kharif* and *rabi*. These seasons have been deter- ed by long usage, which itself has been ermined primarily by rainfall. The *kharif* son opens in May and banks heavily on south west monsoon. The *rabi* opens in middle of October, as the south west eats and the north east monsoon takes r.

re-monsoon rains (March to May) are ortant for the sowing of *kharif* crops like mn rice and jute. The main monsoon e to Sept.) covers the growth and har- ting of *kharif* crops. Post-monsoon rains t. to Dec.) are essential for the *rabi* crops. e monsoon is delayed or weakened it lead to drought conditions. On the other d, if the monsoon pours forth in full force, ds are likely to cause crop losses.

od Crops account for a little over 80 cent of the gross cropped area and -food crops, the rest of the area.

oodgrains make up 95.5 per cent of the l area under food crops. Sugarcane (1.8 cent), fruits (1.7 per cent) and other food os (1 per cent) account for the balance of 4.5 per cent. Among foodgrains, eals take up 82.6 per cent and pulses 17.4 cent.

In the total area under cereals, rice leads with about 36 per cent, followed by wheat 18 per cent, jowar 16 per cent and bajra 13 per cent.

Pulses cultivation, either in rotation with cereals or inter-spaced with cereals, accounts for about 21 million ha. or 13.3 per cent out of the gross cropped area of 158 million ha.

Potato: Lahaul's World Record

Lahaul-Spiti district of Himachal Pradesh has earned the distinction of achieving the highest per hectare production of potato, relegating the Netherlands to second position.

According to a research paper published in "Agricultural Situation in India," a specialised journal of the Union government, a gross yield of 46,979 kg per hectare was recorded in the Lahaul valley where about 1,200 hectares was under the potato crop.

The Netherlands was so far the leading country in seed potato production with a yield of 37,772 kg per hectare followed by the U.K. and West Germany with yields of 31,789 kg and 30,948 kg per hectare respectively.

The Lahaul valley may well figure in records in another way too with potato fields located at elevations ranging from 8,000 to 11,000 feet above the sea level. Seed potato is the only cash crop grown in the tribal areas of Himachal Pradesh.

According to the paper, the survey to ascertain the production per hectare was done on a random sampling basis in the Lahaul seed potato fields which form a single compact region in the district.

The Lahaul valley lies beyond the high Rohtang pass which remains cut off from the rest of the world for almost nine months in a year as a result of heavy snowfall.

The average yield of seed potato of the central potato research institute at Simla ranged between 25,000 and 30,000 kg per hectare.

Area, Production and Yield

A: Area in lakh hectares P: Production in lakh tonnes/bales Y: Yield in kg. per hectar

Crop		1950-51	1980-81	1984-8
Rice	A	308.10	401.52	411.5
	P	205.76	536.31	586.3
	Y	668	1336	1425.0
Wheat	A	97.46	222.79	236.1
	P	64.62	363.13	442.2
	Y	663	1630	1873.0
Jowar	A	155.71	158.09	156.8
	P	54.95	104.31	112.5
	Y	353	660	717.0
Bajra	A	90.23	116.57	106.4
	P	25.95	53.43	61.6
	Y	288	458	579.0
Maize	A	31.59	60.05	57.
	P	17.29	69.57	83.
	Y	547	1159	1441.
Total Cereals	A	782.30	1042.10	1039.
	P	424.14	1189.62	1340.
	Y	542	1142	1290.
Gram	A	75.70	65.84	68.
	P	36.51	43.28	45.
	Y	482	657	663.
Total Pulses	A	190.91	224.57	227.
	P	84.11	106.27	121.
	Y	441	473	537.
Total Foodgrains	A	973.21	1266.67	1266.
	P	508.25	1295.89	1462.
	Y	522	1023	1154.
Groundnut	A	44.94	68.01	77.
	P	34.81	50.05	67.
	Y	775	736	870
Rapeseed & Mustard	A	20.71	41.13	44
	P	7.62	23.04	30
	Y	368	560	688
Total Oilseeds	A	107.27*	176.03	198
	P	51.58*	93.72	130
	Y	481*	532	660
Sugarcane	A	17.07	26.67	29
	P	570.51	1542.48	1735
	Y	33422	57844	5801

* Five major Oilseeds, viz. Groundnut, Rapeseed & Mustard, Castorseed, Sesamum and Linseed.

Bengal gram represents the largest single item in pulses cultivation, accounting for an area of 7.4 million ha. Tur/Arhar/Red gram covers 2.4 million ha. The rest of the varieties are grown over an aggregate area of 11.3 million ha.

Spices. India is known as the home of spices. Out of the seventy spices liste the International Organisation for stand almost all of them are grown in India. annual production of all the spices together comes to 1.5 million tonnes. Th fairly large quantities are exported, b the production is consumed within the

. The share of Indian exports in the world de of spices is about 25%.

epper. Among the Indian spices, pepper the most important. It is native to the estern Ghats of India. Though the country d a monopoly for pepper production ear- r it now accounts for only 20% of the world put. Pepper is grown in an area of 1,10,640 ctares in the southern part of the country oducing 27,410 tonnes annually. The rld's first and only hybrid variety, 'Pan- ur-1' was evolved at the Pepper Research tion, Panniyur in Kerala State. Pepper is a all farmer's crop and generally grown as a xed crop in the homestead gardens. The mmercial grade, Malabar Garbled Extra ld, fetches the highest price in the interna- nal market.

Cardamom. Cardamom, the Queen of ices, is the next most valuable spice. The op is indigenous to South India. India is the gest producer with 4,400 tonnes. West ian countries are the major markets for lian Cardamom. "Alleppey Green" is the st sought after cardamom in the world.

Ginger, Turmeric, Chillies. India is the gest producer of ginger and turmeric in world accounting for 60% and 90% the al output respectively. The annual produc- n of ginger is around 80,000 tonnes and meric 1,99,000 tonnes. "Cochin ginger" and leppey turmeric" get premium price in international markets. India is also the rld's largest producer of chillies (Capsi- ns) (see Box). The varieties commercially wn are of medium pungency. Export of lli is negligible and more than 95% of the production is consumed locally. There is vast scope for growing the mildest paprikas to the most pungent chillies.

India Exports Wheat

India has entered into agreements with several countries to export 2.90 lakh tonnes of wheat in 1986-87 as against 3.37 lakh tonnes in 1985-86, the Rajya Sabha was informed on August 5 last.

Minister of State for Commerce Brahma Dutt said that agreements had been entered into for export of one lakh tonnes as commodity loan to Vietnam and for sale of 50,000 tonnes to Jordan 1,10,000 tonees to DPR Korea and 30,000 tonnes to Nepal.

He said export of basmati rice during 1983-84, 1984-85 and 1985-86 were 1.42 lakh tonnes, 2.42 lakh tonnes and 2.35 lakh tonnes respectively.

During 1985-86, 10,000 tonnes of maida and 200 tonnes of dal were exported to Mauritius as gift. Export of coarse grain during 1985-86 was provisionally estimated at 12,457 tonnes.

India's trade with West Asian and African countries during April-December in 1985-86 increased by four per cent as compared with the corresponding period in the previous year.

MILK: PROBLEM OF PLENTY

India has made big headway in the production of milk. The per capita availability of milk and milk products has risen from 107 grammes a day in 1970 to 144 grammes in 1984-85.

'he 'Operation Flood' launched in 1970-81 the Operation Flood II launched in 1979 resulted in a big spurt in milk production. record production has in fact created a blem of plenty especially in Gujarat ose Anand Dairy has been hailed as a del in many international livestock cen- :.

)peration Flood-III — the world's largest and most ambitious of such programmes is on the anvil now.

Large Project. The Rs 680-crore Operation Flood III project was cleared by the Public Investment Board (PIB) by late 1986 paving the way for negotiations to secure a loan from the World Bank and commodity assistance from the European Economic

Community (EEC).

It is the Indian Dairy Corporation, which is implementing the project. A soft loan of $150 million has been asked from the World Bank to implement Phase III of Operation Flood. An additional $75 million also has been requested to take up schemes for improving the quality of milk produced and for conversion of milk into products like yoghurt, soft cheese etc.

It is felt that having achieved a substantial increase in the production of milk, the time has come to devote attention to the marketing and development of milk products. After the Operation Flood project was launched the milk output had doubled from 22.5 million tonnes in 1971-72 to 41 million tonnes in 1985-86. The per capita milk consumption had increased from 112 grams a day to 147 grams.

Milk procurement in rural areas had also risen significantly. The average procurement during peak flush month touched 9.3 million kg in 1985-86 compared with less than one million kg in 1971-72. The throughput of metro dairies rose from one million litres a day in 1971-72 to 3.1 million litres in 1985-86. Milk marketed in 150 smaller towns rose from one lakh litres a day to 2.3 million litres.

Successful. Notwithstanding the criticism by sociologists, Operation Flood had attracted worldwide attention and had been commended as one of the most successful commodity assistance programmes in the world. The report of the evaluation team of the EEC as well as the report of the World Bank audit of the performance of the project had been favourable. More recently, a team from the EEC had visited India to appraise the project, but this team comprised dairy technologists, economists and sociologists whose perceptions differed.

There has been a criticism that commodity assistance from the EEC had increased the dependence of India on imports. But the commodity assistance sought for Operation Flood III comprised 15,000 tonnes of milk powder and 5,000 tonnes of fat, which was only half of the commodity assistance got for Operation Flood I.

The project had been so managed financially that Operation Flood I generated internal resources to the tune of Rs. 100 crore and Operation Flood II generated Rs. 330 crore. Operation Flood III would genera
Rs. 500 crore and this was expected to he
carry on the dairy development proje
completely on internal resources.

Momentum. The Indian Dairy Co
poration's latest report on the progress
Operation Flood shows that the programn
gained considerable momentum during t
past five years The milkshed coverage mo
than doubled and the number of milk pr
ducers' cooperatives in villages rose
40,000 from 18,420. While the avera
throughput of the metropolitan dairies e
ceeded three million litres a day, the tally
smaller town dairies jumped to 2.3 mld fro
0.92 mld.

The level of milk procurement too re
istered a spurt, reaching almost 10 milli
litres a day.

The scores recorded, however, fell sh
of the slated aims of the OF-II, according
which 10 million rural milk producer famil
should have been enabled to build a vial
self-sustaining dairy industry by mid-19
and to rear a national milch herd of 15 mill
crossbred cows and upgraded buffalo
Recently, the L. K. Jha Committee identif
certain constraints that slowed down effo
at providing health cover, upgrading
stock and improving availability of fod
and other inputs necessary for stepping
milk production and the per capita availa
ity which despite improvements are at
levels compared even with some of the ot
developing countries.

Ironically, in at least some States
Gujarat, Maharashtra and Tamil Nadu, n
producers' federation are facing the probl
of plenty, with the cooperatives having
declare procurement holidays on accour
unusual spurts during the peak months. In
V. Kurien's opinion, this represents a cycl
increase around a long term average gro
rate, which means at least a part of
indicates an enduring uptrend. What
quires to be recognised is that the
producer expects his cooperative to acc
all the milk he offers for sale—in fact, th
axiomatic for the success of the An
pattern of cooperatives the concept on w
the Operation Flood programme is found

That the cooperatives have had to
milk away suggests that the processing
storage capacities created are not adequ

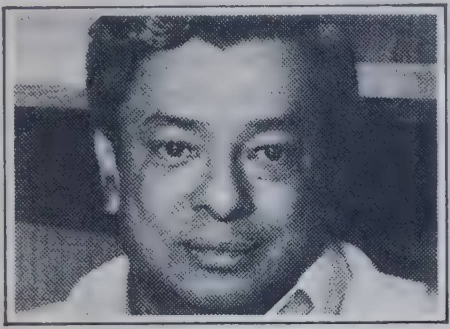
nother facet of the problem is the one ntnessed in a district unit like Salem (Tamil adu) where daily products like butter, ghee d milk powder worth Rs. 3 crore seem to ve piled up, forcing it to run into difficulties er payments to its member societies. If owed to persist this may have a chain action affecting the primary producer him- lf.

While building a buffer stock of milk wder and butter oil is an important and cognised component of the strategy for abilising milk availability in the lean sea- n, care needs to be taken against indi- dual unions or federations being left to apple with any serious glut in converted iry products. Since this is an area where e private sector has a foothold, the coop- atives will have to think in terms of making eir products competitive in price as well as ality and a differential in the price realisa- n as between milk and milk products, as is ing contemplated, may be in order.

The programmes for dairy development e mainly intended to generate additional comes for millions of farmers and landless bourers having one or two heads of milch ttle, thereby helping them to cross the verty line. Dairy farmers are motivated to ganise themselves into strong co-opera- es so as to dispense with the services of a st of middlemen in the milk trade.

lodern Concept. The foundation a viable, modern and self-sustaining dairy dustry based on co-operative concepts as laid in 1970 in the form of Operation ood-I. Operation Flood-II Project was taken for implementation from 1979 with an timated outlay of Rs. 485 crore. Upto tober, 1984, twenty-five States/Union Ter- ories had executed the necessary agree- ent with the Indian Dairy Corporation (IDC) the implementation of the project. Twen- ne perspective Dairy Development Plans ve already been approved by the IDC out the plans prepared by 24 States/UTs. The maining are under scrutiny.

The major activities taken up under the peration Flood-II Project included organisa- n of a three-tier co-operative structure at producer, district and State levels, provi- n of technical inputs and establishing ocessing capacities and marketing facili- s in rural milk-sheds through the co-



Dr. Verghese Kurien

Time to Reduce Milk Price

It is time to cut milk prices, feel Dr. Verghese Kurien, 65, the Mechanical Engineer from Kerala, who rose to become the undisputed leader of Indian dairying and joined select band of recipients of the Carnegie Foundation's Peace Awards in 1986.

Because of the success of Operation Flood schemes, many states are faced with the problem of surplus during the flush season. For example, Maharashtra faced with the surplus of 300,000 litres of milk per day. This is an opportunity for the government to consider reducing the price of milk which will induce more consumption, says Dr. Kurien.

He referred to the criticism that the gains of the Operation Flood schemes were questionable because it was generating milk from imported commodities and allowing locally produced milk to go waste.

The surplus is an indication that it is time to move from a mentality of rationing to one of exploiting the new situation, which has caught us unawares because few believed that Operation Flood would be so successful, Dr. Kurien feels.

The challenge of the situation of surplus was to improve marketing, which had not kept pace with milk production, he said. This could be done by improving the quality of milk, reducing the price, diversifying into other products, improving the distribution system and preventing the entry of any more buffaloes into the surplus area.

operative structure.

Low Yield. Though India had about 352 million cows the total production of milk in India worked out to an average of about 157 kg milk per animal per year. This is very low compared to 4154 kg in USA, 3950 kg in UK,, and 3902 kg in Denmark. The Indian buffalo does much better with 504 kg per year but even this is only one-seventh of what it is in some advanced countries.

Per capita availability of milk in India, according to Dr. Verghese Kurien was 137 gm daily in 1940 when such an estimate was first made. It declined continuously to reach 107 gm in 1970. Thereafter, availability has increased to 118 gm per day in 1977 and further to 122 in 1979. Even this record is dismally low compared to the world situation which itself had been steadily deteriorating. In 1970 while the average world availability was 288 gm, Indian supply stood at 108 gm.

India was thus perennially short of milk. To make matters worse, what little milk the country produced was disposed of in the most haphazard manner. This affected the producer and the consumer adversely. The only workable solution to this problem was commercial dairying. Operation Flood Project was therefore conceived as the foundation for a big dairy industry in India which would increase and stabilize milk production and also provide a steady supply of milk or milk products at reasonable prices.

Urban Problem. Whenever a shortage or dislocation of milk supply occurred, the worst sufferers were the urban families. In view of this, the four metropolitan cities of India–Bombay, Calcutta, Delhi and Madras– were selected as the first targets of Operation Flood.

The Operation Flood Project is entirely based on food aid from the World Food Programme which was expected to cost 153 million dollars. The WFP has offered India 126,000 tonnes of skimmed milk powder (SMP) and 42,000 tonnes of butter oil (BO) as a grant. It was understood that through the sales of these commodities Rs. 116.4 cr. would be generated and deployed for the Operation Flood project.

The Indian Dairy Corporation (IDC) was set up as a government company in 1970 under the Indian Companies Act. The Corporation was entrusted with the administration of Operation Flood projects, that is to say, with the milk marketing and dairy development project under the World Food Programme.

National Board. National Dairy Development Board, which was constituted in September, 1965 under the Societies Registration Act, 1860, was to assist the IDC in al technical matters.

Operation Flood I was launched in July 1970 with the aid from the World Foo Programme (WFP) in terms of skimmed milk powder (SMP) and butter oil (BO) to brin about a real breakthrough in milk productio so as to free the rural population from the grip of poverty. Initially introduced as Five-Year Project (1970-75), it was finall concluded on March 31, 1981, after 11 years.

The immediate objective in launchin Operation Flood I was to secure a comman ding share of the liquid milk market in the four metropolitan cities of Bombay, Calcutta Delhi and Madras and to stabilize the suppl and consumption of milk in these cities. Th object has largely been achieved.

As regards the more substantive long ter objective of increasing national milk produc tion and supply, OF I did not make muc headway. The organized production an procurement of milk under this scheme only 80 lakh litres (production) and 30 lak litres (procurement) per day as against an A India targeted daily milk production of 81 lakh litres originally programmed for 197 80.

Nevertheless, much has been achieve The total milk production of the country stoo at 30 million tonnes (1979-80) which shows a increase of 9 million tonnes over the pre project level (1970) of 21 million tonnes. Th increased per capita milk consumption fro 110 gm per day in 1969 to 122 gm in 1979-80

In processing milk for supply to the fou metropolitan cities, the project achieve its target of 29 lakh litres per day. Financiall the project has been a success too. Again an amount of Rs. 112.7 cr. generated throug the sale of donated commodities till October, 1980, the total expenditure unde the project was Rs. 112.2 cr.

Milk Products. The consumption liquid milk in India is very poor, hardly 40 of the total milk supply. The balance of 60%

nverted into various milk products like ee, dahi, butter and others. Ghee by itself aims around 33% of the aggregate milk pply. Apart from their direct consumption ese products are used to manufacture gh-priced items.

Sweets apart, the other milk products are ilk powder, processed food such as baby od, beverages, cheese and butter. The oduction of milk products in 1979-80 was timated at 32,600 tonnes of milk powder, ,000 tonnes of baby milk powder, 22,500 nnes of malted milk powder, 5600 tonnes of ndensed milk and 930 tonnes of cheese. e total production of all varieties of milk powder was 68,100 tonnes in 1979-80 as against 59,530 tonnes in the preceding year.

A disturbing trend in urban milk supply is the rising prices. Between 1970 and 1980 the price of milk has nearly trebled itself.

Part of this price rise can be attributed to inflation but the better part is accounted for by heavy overheads, transport charges and intermediary profit. One report goes so far as to say "There are numerous intermediaries between the producing centres and the consuming centres who make urban consumers to pay through their noses, while the poor farmer is deprived of the price rise."

DEVELOPING RURAL INDIA

India lives in its villages. According to statistics, there are 5,75,000 Villages in India. The majority of them are inhabited while some of them are dead or deserted. Rural development has been given the utmost priority in the Seventh Five-Year Plan.

The Ministry of Rural Reconstruction was nstituted under the Presidential Notifican dated the 19th August, 1979, and conued as such till 23rd January, 1982 when it as renamed as the Ministry of Rural evelopment. By Presidential Notification ated the 4th January, 1985 it has again ecome the Department of Rural Development in the Ministry of Agriculture and Rural evelopment.

ural Poverty. The major thrust of the rogramme of this Department is on strengening the socio-economic infrastructure of evelopment in the rural areas and the leviation of rural poverty which has been ne of the prime objectives of the Sixth Plan.

In order to alleviate the lot of the rural poor mprising the small and marginal farmers, ndless labourers, rural artisans, etc. in 85-86 Government continued the various rogrammes, such as the Integrated Rural evelopment Programme (IRDP), National ural Employment Programme (NREP), ural Landless Employment Guarantee rogramme (RLEGP), Drought Prone Areas rogramme (DPAP), Desert Development rogramme (DDP), Development of Selected egulated Markets, Development of Rural arkets, Establishing a National Grid of Rural Godowns, etc.

The Integrated Rural Development Programme, covers all the blocks in the country. It is meant for the benefit of the rural poor, with family as the basic unit of development. At least 30% of the families assisted under the Integrated Rural Development Programme should be from among the Scheduled Castes and Scheduled Tribes. During the Sixth Plan period, it was expected that at the rate of 3,000 families per block, 15 million families would be assisted under this programme for improving their economic condition, with the ultimate objective of enabling them to raise their incomes above the poverty line.

The National Rural Employment Programme is meant mainly for providing wage employment to the rural unemployed. Simultaneously, it is expected that durable community assets would be created through the works taken up under the Programme. In addition, the programme aims at improvement of the nutritional status of the rural families as a part of the wages is given in the form of foodgrains. This Programme has played a significant role in tackling the problem of underemployment in the rural areas.

The Rural Landless Employment Guarantee Programme (RLEGP), which covers the whole country, is another anti-poverty programme. Its aim is to provide employment opportunities for the rural landless labourers particularly during the lean agricultural periods when work is scarce. Its objective is to provide employment to at least one member of each landless labour household for a period of upto 100 days in a year.

IRDP. The Integrated Rural Development Programme was launched in 1978-79 in 2300 Development Blocks which were earlier covered by special programmes like Small Farmers Development Agency, Drought Prone Areas Programme, Command Area Development etc. This Programme was extended to all the Development Blocks of the country with effect from the 2nd October, 1980. This programme is a part of the New 20-Point Programme.

As a major poverty alleviation programme, the objective of the IRDP is to provide assistance to families below the poverty line to enable them to improve their income level and eventually cross the poverty line. This is to be achieved by providing productive assets to the identified families. The capital cost of the asset is subsidised to the extent of 25 per cent for small farmers, 33-1/3 per cent for marginal farmers, agricultural labourers and rural artisans and 50 per cent for the Scheduled Tribes. A family may receive upto Rs. 3000/- by way of subsidy.

In DPAP areas the limit of subsidy admissible is Rs. 4,000/-. Tribal beneficiares can get upto Rs. 5000/- by way of subsidy. For meeting the balance of the cost of asset, credit is provided by the banking institutions. The Sixth Plan allocation for the programme has been Rs. 1500/- crore, shared equally by the Centre and States. In addition, credit to the extent of Rs. 3000 crore was to be mobilised during this period. Thus, the total investment under this programme was approximately Rs. 4500 crore.

During the Sixth Plan which ended on 31st March, 1985, as against the target of 15 million families, 16.562 million families were assisted under IRDP Programme. The number of SC/ST beneficiaries covered were 6.453 million as against the target of 4.5 million. The total investment was of the order of Rs. 4,762.78 crore (including Rs. 31.0035 crore of bank credit).

The strategy adopted for the Seventh pla
is two-fold, one to consolidate the gains of th
Sixth Plan by giving supplementary dose o
assistance to deserving and to take up ne
beneficiaries.

Women, Children. Development
Women and Children in Rural Areas is
comparatively new scheme launched by th
Department with effect from September 198
and is being implemented on a pilot basis i
50 selected backward districts in differe
States, as a component of IRD programm
Through special efforts and provision
necessary inputs, the scheme seeks to e
able rural women to participate more effe
tively in the rural development programme
in general and IRDP in particular.

The Special Livestock Production Pro
ramme (SLPP) was initiated in 1975-76 o
the basis of the recommendations of th
National Commission on Agriculture.

The programme is in operation in 18
districts in 21 States and 4 Union Territorie
The programme consists of two parts, viz., (1
Cross-bred heifer rearing and (2) setting u
of sheep, poultry and piggery productio
units. Under the scheme (i) assistance
provided at the rate of 50 per cent to sma
and marginal farmers and 66-2/3 per cent
agricultural labourers for feeding of cros
bred heifers from 4th to 32nd months of ag

Under the scheme (ii) assistance is give
for setting up of sheep, poultry and pigger
production units for which subsidy is pr
vided at the rate of 25 per cent to sma
farmers and 33-1/3 per cent to margina
farmers and agricultural labourers, subject
a maximum of Rs. 3,000/- per beneficiary. I
the case of tribal participants the rate
subsidy is 50 per cent subject to a maximu
of Rs. 5,000/-.

Thirty per cent of the beneficiarie
selected under the programme are to b
from the Scheduled Caste/Scheduled Tribe
communities. The expenditure on the pro
ramme is shared on a 50:50 basis with th
State Governments and 100% to Union Terr
tories.

TRYSEM. The national scheme of Trai
ing of Rural Youth for Self-Employme
(TRYSEM) was initiated with effect from 15

New 20-Point Programme

The government on August 20, 1986 announced in the two houses of Parliament a revised 20-point programme with a major thrust on poverty alleviation programmes so that they reach all the poor in every village.

"The war on poverty is our first priority. In the past five years, more than ten crores have been raised above the poverty line. Our goal is to remove poverty and create fuller employment" the programme document said.

"The 20-point programme is the cutting edge of the plan for the poor", it pointed out, and said the programme had been restructured in the light of "our achievements and experience and the objectives in the Seventh Plan". The restructured programme renews the commitment to eradicating poverty, raising productivity, reduce income inequalities, removing social and economic disparities and improving the quality of life.

The revised programme also lays emphasis on the creation of a responsive administration envisaging simplification of procedures and promptly attending to public grievances, providing new opportunities to youth, involving them in massive national development projects and special programme for rural labour.

The programme proposes to involve youth in the cleaning Ganga and conservation and enrichment of environment projects. Services of educated youth will also be utilised for imparting mass education.

Though the main thrust of the new programme is on alleviation of poverty, stress is laid on two-child norm and providing equality for women.

The other thrust area under the programme is on the rigorous enforcement of land reforms and new strategy for forestry.

The Programme

1. Attack on rural poverty. 2. Strategy for rainfed agriculture. 3. Better use of irrigation water. 4. Bigger barrels. 5. Enforcement of land reforms. 6. Special programme for rural labour. 7. Clean drinking water. 8. Health for all. 9. Two-child norm. 10. Expansion of education. 11. Justice to scheduled caste and scheduled tribes. 12. Equality for women. 13. New opportunities for youth. 14. Housing for the people. 15. Improvement of slums. 16. New strategy for forestry. 17. Protection of the environment. 18. Concern for the consumer. 19. Energy for the village. 20. A responsive administration.

The first 20-Point Programme announced on July 7, 1985 was raised seven years later on January 14, 1982. Both the programmes were formulated with a view to ameliorate the living condition of the rural poor.

Punjab, Rajasthan and U.P. top among the 22 states in implementation of the 20-point programme during 1985-86. The ranking of states is done by a monitoring team specially appointed by the government to see how far the 20-point programme has been implemented by the states.

Recently made available statistics on the ranking of the states in implementation of the 20-point programme during 1985-86 rank Tamil Nadu, Gujarat, Haryana, Maharashtra, H.P. and Sikkim as the next six states after the three northern states.

The relative position of the 22 states in terms of their ranks are: Punjab (1), Rajasthan (1), Uttar Pradesh (1), Tamil Nadu (4), Gujarat (5), Haryana (5), Maharashtra (5), Himachal Pradesh (8), Sikkim (8), Andhra Pradesh (10), Tripura (10), Karnataka (11), Madhya Pradesh (11), Manipur (14), Orissa (14), Bihar (16), Meghalaya (17), West Bengal (18), Kerala (19), Nagaland (20), Jammu & Kashmir (21) and Assam (22).

Aug. 1979. The main thrust of the scheme is on equipping rural youth in the 18-35 age group with necessary skills and technology to enable them to take vocations of self-employment.

Under the scheme, the target is to train about 2,00,000 rural youth every year at the rate of 40 rural youths per block. The scheme is an integral part of IRD Programme.

The selection of beneficiary families is based on income criterion i.e., a family having income of less than Rs. 3,500 per year is considered for selection. First priority is given to the poorest of the poor families and only one person is taken from each of the selected families. Preference in selection is to be given to those who have entrepreneurial aptitude. Priority categories for selection are Scheduled Castes, Scheduled Tribes, ex-servicemen and persons who have attended the nine months course under National Adult Education Programme (NAEP). For women, a sub-target has been fixed for the coverage to the extent of one-third of the TRYSEM trainees.

The accepted modes of training are through industrial technical institutes, master-trainers, master-craftsmen, skilled artisans, industrial and servicing units, commercial and business establishments etc.

There are two types of financial assistance available under this scheme—(a) non-recurring and (b) recurring as shown below:

(a) Non-recurring Assistance. There is a provision of Rs. 5 crore in the Sixth Plan for strengthening of training infrastructure in different States/Union Territories. There is a separate budget provision for this. Assistance for strengthening of infrastructure can be granted only by the Government of India. All proposals have to be sent to this Department through the State Governments/UTs. Assistance is given in the form of grant-in-aid. It is a one-time grant. All institutions which impart, or are capable of imparting training to rural youth in any vocation leading to self-employment are eligible for assistance for strengthening their training infrastructure capabilities.

Assistance to central institutions, agricultural universities etc. and the institutions in the Union Territories is given cent per cent by the Government of India. Assistance to all other institutions is on 50:50 matching basis by the Central and the State Governments.

Institutional Credit. The Sixth Plan target to assist 15 million families through IRDP programme has been achieved. The financial allocation in the Sixth Plan has been Rs. 1500 crore and the total institutional credit to be mobilized was of the order of Rs. 3000 crores. The programme, thus had an investment of Rs. 4500 crore in the Sixth Plan for providing assistance to rural families below poverty line.

A major development in the field of institutional finance for rural areas (which took place in the year 1982) was the establishment of the National Bank for Agriculture and Rural Development (NABARD). On July 12, 1982, this Bank took over all the functions of ARDC, along with certain functions of the Reserve Bank of India. Considering that the NABARD has a much wider charter than the erstwhile ARDC, it is expected that this Bank will be able to play its role of financing rural development in an integrated manner. Unlike ARDC, NABARD is also re-financing for secondary and tertiary sectors in rural areas, which constitute very important components of the IRD Programme.

Rural Employment. To tackle unemployment/underemployment in the rural areas, the National Rural Employment Programme (NREP) was launched in October, 1980 replacing the earlier Food for Work programme (FWP). It became a regular part of the Sixth-Five Year Plan from 1st April, 1981 and since then it is being implemented as a centrally sponsored programme on 50 : 50 sharing basis between the Centre and the States.

It envisages generation of additional employment opportunities in the rural areas of the order of 300–400 million mandays every year, simultaneous by creating durable community assets to strengthen the rural infrastructure, and raising the nutritional standard of the rural poor. The programme operates in close conjunction with the on-going developmental works ensuring that employment and development support each other and the benefits flowing to the community are maximised.

For the Sixth Plan period, there was a total location of Rs. 1620 crore for the programme. Of this, the shares of the Central sector nd State sector were Rs. 980 crore and 640 rore respectively. The entire expenditure n the first year i.e. 1980–81 was borne by he centre. A total of Rs.1834.25 crore in cash nd 1.71 lakh mts of foodgrains were utilised or their programme in the Sixth Plan. An utlay of Rs. 1250.81 crore has been provided or the programme in the central sector in he Seventh Plan.

and Reforms. The main objective of he land reform measures undertaken after ndependence was the removal of such nstitutional and motivational obstacles as stood in the way of modernization of agriculture and a more egalitarian social structure. The following principal measures of land reforms have been implemented in fulfilment of this objective:

(a) Abolition of intermediary tenures; (b) rovision of security to tenants with the ultimate objective of conferring ownership ights on them; (c) imposition of land ceiling n agricultural holdings and distribution of urplus land to landless agricultural workers s well as small landholders; (d) preparation nd maintenance of land records; and (e) onsolidation of agricultural land holdings.

In pursuance of these, legislative measures ave been enacted almost all over the ountry ever since the early 50s. By now, ntermediary tenures like zamindaris, jagirs, nams, etc. have been abolished all over the ountry. As a result of these measures, more han 20 million tenants have been brought in direct contact with the State. Besides this, several million acres of waste, fallow and other classes of land have rested in the state; a large proportion of this have been distributed to the landless and marginal landholders.

By now legislative provisions have been made in extensive areas of the country providing for conferment of ownership rights on tenants or allowing cultivating tenants to acquire ownership rights on payment of a reasonable compensation to the landlords. Some of the states have acquired ownership of land from the landlords and have transferred it to the tenants who have to pay a certain compensation to the state.

Poverty Line

According to the Seventh Plan document, 36.9% of India's population is living under Poverty Line. The planners propose to bring it down to 25.8% by the end of the plan—the year 1990.

This will mean that 272.7 million of the country's population is living under poverty line now. This is to be brought down to 210.8 million through wide spectrum of developmental efforts during the Seventh Plan.

The poverty line was originally defined as Rs. 65 per capita per month at 1977-78 prices for the rural population and Rs. 75 for the urban population.

It has been redefined as an income of Rs. 3500/- per annum. Those who have an income below Rs. 3500/- are considered below poverty line.

Thus the states where ownership right has been given to the general body of tenants through one measure or the other are Andhra Pradesh (Telengana Area), Assam, Gujarat, Himachal Pradesh, Maharashtra, Manipur, Orissa, Rajasthan, Tripura, Uttar Pradesh, Jammu & Kashmir, Karnataka, Kerala, and Madhya Pradesh. As a result of this, eight million tenants have acquired ownership of 7.2 million hectares.

Drought Prone Areas. Drought has been a recurring phenomenon in some parts of the country. These areas are poorly endowed with natural resources. Their economy is chronically stagnant and becomes still more so in years of scarcity. An enormous expenditure on scarcity relief measures was periodically incurred to save the local population from starvation. Government have been trying to solve the problems of the chronically drought affected areas in a systematic manner so as to provide some security to the inhabitants there. While it may not be possible to prevent droughts, at any rate in a decade or so, efforts have been made to alleviate their impact through a variety of schemes.

The allocation for the entire programme during the Sixth Five-Year Plan (1980–85) was Rs. 350.00 crore i.e. Rs. 175.00 crore under the Central Plan and an equal amount under the State Plans.

Rural Works Programme

Rs. in lakh

	State	No. of Districts	No. of Blocks	Allocation Rs. 7.50 lakh per block
1	2	3	4	5
1.	Andhra Pradesh	7	66	495.00
2.	Bihar	2	31	232.50
3.	Gujarat	8	42	315.00
4.	Haryana	1	9	67.50
5.	Jammu & Kashmir	2	13	97.50
6.	Karnataka	10	70	525.00
7.	MadhyaPradesh	6	48	360.00
8.	Maharashtra	10	53	397.50
9.	Orissa	4	39	292.50
10.	Rajasthan	4	18	135.00
11.	Tamil Nadu	3	30	225.00
12.	Uttar Pradesh	10	63	472.50
13.	West Bengal	3	29	217.50
		70	511	3832.50

Desert Development. The Desert Development Programme was started in 1977-78 with the objective of controlling desertification and restoration of the ecological balance of certain desert and semi-desert areas and creation of conditions for raising the level of production, income and employment of the people of these areas. This was sought to be achieved by the following major activities:

(i) Afforestation (with special emphasis on shelter belt plantation, grassland development and sand dune stabilization; (ii) optimum exploitation and conservation of ground-water; (iii) construction of water harvesting structure; (iv) rural electrification for energizing tubewells and pumpsets; and (v) development of agriculture, horticulture, animal husbandry suited to the agro-climatic conditions of the area.

The programme covers both hot and cold desert areas of the country—17 districts in the hot deserts (11 in Rajasthan, 4 in Haryana and 2 in Gujarat) and 4 districts in the cold deserts, (2 in Jammu & Kashmir and 2 in
Himachal Pradesh). This coverage was
cided upon in the light of the recommen
tions of the Task Force on the DPAP and
DDP set up by the Department in 198

Agricultural Marketing. A
cultural marketing and warehousing in r
areas (including rural godowns) are a
important. In agricultural marketing, the
partment is assisted by the Directorate
Marketing and Inspection (D.M.I) which
headed by the Agricultural Marketing Ad
er to the Government of India. The Dire
rate of Marketing and Inspection has
head-office at Faridabad and Branch H
Office at Nagpur. Besides five regio
offices at Delhi, Bombay, Madras, Calc
and Guntur, the D.M.I. has 50-suboffi
located at various places throughout
country. Also, there is a chain of 21 Agm
laboratories all over the country with
Central Agmark Laboratory at Nagpur as
apex laboratory.

The enactment of Agricultural Prod
Markets Acts has enabled the States/U.T
establish regulated markets administered
Market Committees, on which are rep
sented the producers, as well as the trad
As on 31-3-1985, there were 2072 princ
markets and 3623 sub-markets which
been brought under regulation.

The development of agricultural prod
markets is a State subject. This Departm
is, however, implementing the following
central sector schemes for providing cen
assistance to the State Governments
development of certain selected catego
of markets. These schemes have been c
ceived to have a catalytic effect and no
the sole source of funding. Any expendi
in excess of the prescribed scales of cen
assistance is to be met by the Ma
Committees/State Marketing Boards/S
Governments from their own resources o
raising institutional finance.

National Institute. The National I
tute of Rural Development at Hydera
continued its research and training activ
during the year 1984. These activities
focus on problems of implementation of
development programmes throughout
country.

The training programme had been

loped on specific topics of concern to the rsonnel involved in the implementation of velopment programmes. Generally, the aining programmes sought to identify the ttlenecks in the implementation of the ogrammes, analyse and discuss them from e point of view of finding solutions. Natural- therefore, the participants in these prog- mmes were government officers and func- naries of other organizations who had volvement in such issues. Thus the syllabi each programme had need-based topics discussion and clarification in the training ssions. This approach had been hailed as most practical and useful by all those who ve attended them.

It is now a settled feature that the officers the Indian Administrative Service and the lian Police Service spend some time at the titute for refreshing their knowledge of rious facets of rural development and the ocess of transformation that is going on in rural areas.

anchayati Raj. The Panchayati Raj stem has been established in all the States l Union Territories except Meghalaya, galand, Lakshadweep and Mizoram. A ee-tier system is in existence in Andhra desh, Bihar, Gujarat, Himachal Pradesh, harashtra, Punjab, Rajasthan, Uttar desh, West Bengal, Arunachal Pradesh l Chandigarh.

A three-tier system also exists in Karnataka and Tamil Nadu, but instead of Zila Parishad, they have the District Development Councils which are advisory bodies with no executive powers. Assam, Madhya Pradesh, Haryana, Manipur, Orissa, Dadra and Nagar Haveli, Delhi and Pondicherry have a two-tier system and in the remaining States and Union Territories a one-tier system is operative. There are 2,90 264 Gram Panchayats, 4076 Panchayat Samities and 310 Zila Parishads in the country.

To promote voluntary efforts in rural development, a Central Sector Scheme which was initiated in the Fifth Five-Year Plan, is being continued. Under this scheme of '*Promotion of Voluntary Scheme* and Social Action Programme', assistance is given to voluntary organisations and non-Government agencies for implementing experimental projects of public cooperation through people's participation.

The projects under this scheme can relate to any aspect of rural life reflecting the felt-needs of the people of the area. In the earlier years assistance was extended to State Governments/Union Territories also. From the year 1982-83, the assistance under the scheme was restricted to North Eastern States and Sikkim where many voluntary organizations were not available to take up such projects. With effect from 1984–85, the financial assistance to voluntary organizations under this scheme is routed through People's Action for Development (India) (PADI).

THE VANISHING FORESTS

In India forests are vanishing at an alarming rate. The unscrupulous woodcutters, charcoal suppliers and forest contractors raze down lush green woods without any hindrance. The ecological imbalances caused by a land mass denuded of forest cover have caught the attention of India's planners, of late.

he basic tenets of the country's forest icy are conservation and development. It ecognized that the forests are to be safe- rded and forests and tree-covers all over country to be enlarged for meeting the ic needs of the people and the nation.

urther, existing natural forests are to be served for protection of environment and rgement of the resource-base to meet the energy, small timber and fodder requirements of the people. It will also be necessary to develop minor forest produce for providing sustenance for the forest-side communities.

Conservation Act. The operation of the Forest (Conservation) Act 1980 has restricted diversion of forest lands to non-forestry purposes. The average annual diversion had been brought down from the level of 1.5 lakh ha. (before enforcement of the Act) to less than 6000 ha.

The Forest Survey of India is presently engaged in the preparation of a vegetation map of the country with the help of remote sensing techniques in collaboration with the Dept. of Environment. The survey is expected to be completed by the end of the current year providing an authenticated vegetation map of the country for the first time.

Afforestation, Social Forestry and Farm Forestry are the three important components of the New 20-Point Programme. As a result of systematic monitoring of the programme by senior officials of the Forestry Department, the programme of afforestation gained momentum during the year 1984-85. Encouraged by the spectacular achievements, higher targets have been proposed for the year 1985-86.

The Project Formulation Cell of the Forestry Division continued its activities during 1984-85 and processed several projects for forestry development through financial and technical assistance from the international agencies, like World Bank, Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), Swedish International Development Agency (SIDA), European Economic Community (EEC), Switzerland, Danish International Development Agency (DANIDA), etc.

Social Forestry. The Centrally sponsored schemes on social forestry (Social Forestry including Rural Fuel Wood Plantation) which was launched during 1980-81 in 101 fuel wood-deficient districts of the country and later extended to 157 districts during 1982-83 for meeting domestic and agricultural needs of fuel, fodder and small timber of rural communities, made encouraging progress during the year under review.

This scheme also included the programme *A Tree for every Child'* for which the Union Government provides assistance in the form of subsidy upto a maximum of Rs. 1000 per ha. for tree plantation and Rs. 250 for every 1000 seedlings raised for distribution among farmers and children. As against the target of planting 2.60 lakh ha. and distribution of about 58 crore seedlings, it is expected that plantations in about 3.30 ha. would be raise and about 80 crore seedlings distributed.

Another Centrally sponsored scheme o 'Soil, Water and Tree Conservation in th Himalayas (Operation Soil-watch)' which wa introduced during the Fifth Five-Year Pla envisaged treatment of identified catchment on micro-watershed basis with a view t preserving the fragile Himalayan eco-syste was being implemented in 12 States and U.Ts. As against the target of 1.10 lakh ha about 1.16 lakh ha, are likely to be treate under this scheme by the end of the Sixt Plan.

Corporations. For the purpose planned forest development in the State Forest Development Corporations are func tioning in 15 States and 4 UTs. These Co porations are primarily engaged in harves ing and marketing of forest produce with th object of eliminating middlemen in accor ance with the policy decision of the Gov Some of the Corporations have also divers fied their activities by collecting and marke ing minor forest produce like sal seeds a oilseeds aimed at helping the poor peopl particularly the tribals living in and arou forests.

In the matter of forestry research a education, various crash programmes d tated by the imperative need to produ greater bio-mass per unit time and space provide for the energy needs of the nati and encouraging more efficient utilization forest produce to foster the theme of d velopment without destruction, have be taken up.

Keeping in view the need for train manpower, facilities for imparting training the forest officials have been expand Simultaneously, action has been initiated stepping up the annual intake in the Ind Forest Service.

The gap between the demand and sup of fuel wood, presently estimated at million tonnes is expected to rise to 1 million tonnes by 2000 AD. For meeting additional requirement of fuel, a tw pronged programme for raising fuel-wo plantations and promoting use of effici stoves and bio-gas has been taken up.

Forestry, like agriculture, is a State subj and the State Governments administer

India Losing Forest Cover

Satellite photographs of the Indian landmass have revealed that the country is losing its forest cover at an alarming rate of 1.5 million hectares per year and the total area under forests today may be as low as about 40 million hectares.

A study by the Department of Environment and Forestry has revealed that during the period 1972-75 the area under forests stood at 54 million hectares and when a similar study was carried out in 1981-82, it stood at 46 million hectares.

While none can dispute the accuracy of the satellite photographs, the statistics of the forest department shows that the area under forests is 74.74 million hectares. But official sources concede that the actual figure would be far less than that.

The existing forest policy prescribes that 33 per cent of the country should be forest. On paper today, it is put at 23 per cent but in reality good forest cover is perhaps only 11 per cent. And this 11 per cent is under continuous pressure to supply the population with forest produce way in excess of its capacity.

There is a yawning gap between demand and availability of firewood. With over 400 million head of cattle, the demand for fodder is far in excess of what the forests can sustain. So is the demand for forest materials for industrial and agro-based needs in excess of the supply. This has led to over-exploitation of forests leading to further destruction of the country's forest wealth.

In addition to this in ecologically sensitive areas such as the Himalayan region, the results of deforestation have been disastrous. It leads to a cycle where the soil cannot hold water and the run-off leads to the loss of valuable top soil and the siltation of rivers, dams and to floods in many parts of the country.

To bring home to the people the dangers of the present trend in deforestation, a meeting was recently held under the chairmanship of the Minister of Environment and Forests Vir Sen. It discussed the mechanics of peoples' participation, identification of wastelands, species selections for planting, who would actually do the planting and other matters concerning the development of the infrastructure needed.

For 1985-86 a total of Rs. 250 crore has been earmarked to be spent as part of the approved annual plan of the Central and the State Governments on social forestry schemes outside forest areas covering communally owned lands and farm forests. In addition 20 per cent of the various schemes under the Department of Rural Development amounting to nearly Rs. 200 crore would be available for social forestry.

For 1986-87, the programme has been enhanced to conform to the national objective of planting five million hectares per year. This is aimed at not only halting the march of deforestation but to enhance the existing dwindling area under forests.

The meeting discussed the performance of the eco-development projects undertaken by the department during the sixth plan period. It covers the development of technology and management package suitable for regeneration of degraded ecosystems, actual demonstration of the viability of developed packages in the field and demonstration of 'know-how' through a scheme of 'show how' so that practical application is made easier.

rests But the Union Government exercises supervisory control. It has its own department under an Inspector-General of Forests India.

According to the Union Minister of Agriculture, more than 4 million hectares of forest land have been deforested in the last 30 years. The new Act is expected to put a stop to similar encroachments in future.

Forest Area. India's total forest area is 75.06 million hectares which is 22.88 per cent of the total geographical area of the country. The per capita forest area works out to 0.11 hectare which is extremely low. India's forest area constitutes 1.85 per cent of the world forest area (4057 million hectares) whereas the population forms 15.64 per cent of the world population (4335 million).

The state owns the greatest forest area, around 71.17 million ha. Corporate bodies account for about 2.48 million ha. and private individuals, the rest.

It will be seen that only Assam, H. Pradesh, Meghalaya, Orissa, A and N Islands, Arunachal Pradesh and Tripura exceed the national norm of 33.3 per cent laid down in the Forest Policy. Kerala, Goa, Daman and Diu and Manipur and Maharashtra maintain plus 20 per cent forest of their respective land areas. All the other States and U. Territories have low percentages of forest land and need urgent reforestation.

Botanical Divisions. Indian forests fall into five botanical types: (1) Evergreen (2) Deciduous (3) Dry (4) Hill (5) Tidal or Littoral.

Evergreen forests are found where the rainfall is 80″ to 120″, i.e. the Western Ghats and the sub-Himalayan regions in the east. Hard wood such as teak, ebony, rosewood and iron wood are found in this area. Bomboos of all varieties thrive well here.

Deciduous forests or monsoon forests are seen in areas where the rainfall ranges from 60″ to 80″. These forests occupy the larger part of the Deccan plateau. The trees are big and provide fine timber—teak, sal, padauk, sandalwood, redwood, arjun etc.

Dry forests occur where rainfall is between 30″ to 40″. The desert regions of Rajasthan and South Punjab are such places. The plants here have thick and fleshy stems and leaves, and the forests mostly consist of thickets of shrubs with a few stunted trees.

Hill forests are found in South India above 5000 ft. and in the Himalayas above 3000 ft. elevation. The trees are evergreen and include the very best timber like oak, picea, deodar, pines, chestnut, walnut, maple, elm, ash and birches; laurels, poplars and rhododendrons also grow profusely here.

Forest in India—State-wise

(In thousand hectares

States/Union Territory	Geographical area	Forest area	Percentage of forest area
AP	27675	6651	24
Assam	9662	3808	38
Bihar	17388	3085	17
Gujarat	19599	1940	9
Haryana	4422	136	3
H. Pradesh	5567	2165	38
J & K	22224	2081	9
Karnataka	19177	3520	18
Kerala	3886	1041	26
MP	44284	17299	39
Manipur	2236	602	26
Meghalaya	2248	757	33
Maharashtra	30776	6686	2
Nagaland	1653	310	1
Orissa	15584	6816	4
Punjab	5036	188	3
Rajasthan	34222	3764	1
T. Nadu	13007	2218	1
Tripura	1048	633	6
UP	29441	4571	1
W. Bengal	8785	1183	1
A and N Islands	829	635	7
Arunachal Pradesh	8358	5154	6
Chandigarh	11	...	
D and N Haveli	49	...	
Delhi	149	5	
Goa, Daman and Diu	381	103	2
Lakshadweep	3	...	
Mizoram†	...	...	
Pondicherry	48	...	
All India*	328048*	75351	2

†Included in Assam

* Included 8411 thousand hectares, the area under ille occupation of Pakistan & China. One hectare is equivale 2.471 acres.

Source: Eastern Economist.

Littoral forests are found in the estuarie great rivers like the Indus, the Ganges a the Mahanadi. The trees here provide exc lent firewood and constitute a rich source of fuel.

Development Programmes.

Forest development programmes stress what are called *productive forestry* and *social forestry*. Productive forestry concentrates on raising man-made forests to meet the long time requirements of forest products in general and materials for wood-based industries in particular.

The Central Government has taken the lead in establishing State Forest Development Corporations, with central participation. These corporations are to be financially assisted by term lending institutions in India and wherever possible by World Bank and its associates. The corporations are expected to take up massive operations.

Social Forestry aims at augmenting fuel wood resources and minor wood for farmers by new plantations of fuel wood trees and small trees suitable for farm needs.

All forest produce other than wood are considered minor forest produce.

36% Rural India Has No Roads.

About 36 per cent of India's villages have remained without a roadlink at the end of the Sixth Plan and about 70 per cent villages do not have all-weather access roads.

This is despite "an impressive growth" in the spread of the transport network as claimed in the Seventh Plan.

While no figures were available for the First, Second and Third Plan peroids, the number of villages connected with all-weather roads registered an annual three per cent growth rate between the Fifth and Sixth plans. From 1.52 lakh such villages in 1980, the number of villages with all-weather roads went up to 1.75 lakh in 1984–85

ASIA'S LARGEST RAILWAYS

Indian Railway has grown into Asia's largest and the world's fourth largest railway system from a modest beginning in April 1853 when the first train steamed off from Bombay to Thana, a stretch of 34 km. It had a route kilometrage of 61,460 on 31st March, 1984. It is also the biggest public undertaking in the country.

The first railway in India as also in Asia was opened by the Great Indian Peninsular Railway Company (now the Central Railway) formed in England. The company took up the survey in 1850. In about 3 years the work was completed and the first train steamed out of Bomaby on April 16, 1853. The train ran from Bombay to Thana—a distance of about 34 km. A new chapter in the history of India was thus opened.

The development of Indian railways owes much to Lord Dalhousie who became the Governor General of India in 1848. It was he who suggested a system of trunk lines connecting the hinterland of Bomaby, Bengal and Madras Presidencies with their principal ports and with each other. But the Government had neither the funds nor the technical personnel to undertake the work. So the work was entrusted to private companies who were guaranteed a return of 5 per cent on their capital for a period of 25 years and free land needed for the railway. In return the companies were expected to share their surplus profits with the government and to sell the railway to the government after 25 years.

But the expected profits failed to materialize and the guaranteed interest continued to be a drain on government resources. So the Government purchased the railways on the expiry of the period of the contract, though the companies continued in management. Following the recommendations of the Ackworth Committee the Government took over the management of the bulk of the railways in 1922.

Expansion: The 1920's were a period of expansion for the railways. New lines were taken up. In 1925 electric traction was introduced. The first electric railway was opened on February 5, 1925 from Victoria Terminus (Bombay) to Kurla. Then followed bad days for the railways with the depression of the 30's and the Second World War. The partition of India in 1947 made matters worse.

The partition left India with 54,151 km of railway line while Pakistan got 11,066 km. What came as India'a share was distributed among the Provinces and 500 and odd Princely States. It was, in fact, a ramshackle railway organization shared by 42 different units of varying sizes, some of them managed by the Government of India, some by Princely States and some by private companies.

The old Princely State of Sangli, for instance, owned a mere 7 km of railway, while the Nizam of Hyderabad managed 2335 km. With the accession of the Indian States to the Union of India, 10,672 km of railways, belonging to different Princely States, were integrated with the government railways in 1950.

Administration. The Indian Railways network is owned and managed by the Central Government. The operations are controlled and directed by the Railway Board under the overall supervision of the Minister for Railways. The Board has five members including the Chairman. The Chairman is Ex-Officio Principal Secretary, and each of the other four Members an ex-officio Secretary to the Government of India.

Zonal Divisions

Railway	Headquarters	Route kilometres
Central	Bombay VT	6371
Eastern	Calcutta	4238
Northern	New Delhi	10977
North Eastern	Gorakhpur	5163
Northeast Frontier	Maligaon (Guwahati)	3583
Southern	Madras	6710
South Central	Secunderabad	7072
South Eastern	Calcutta	7051
Western	Bombay Churchgate	10295
	Total	61,460

The Board thus performs the dual functions of a secretariat to the Ministry of Railways and that of an executive body responsible for railway operations. The Railways' annual budget is approved by Parliament and accounts are audited by the Comptroller and Auditor General of India.

The railway net-work is divided into nine *Zonal Railways* each headed by a General Manager. The Zonal Railways are organized on the divisional pattern. The nine Zonal Railways with the route kilometres traversed by them are given below:

In addition there are three Production Units, viz the Chittaranjan Locomotive Works, Chittaranjan, Integral Coach Factory, Perambur (Madras) and Diesel Locomotive Works, Varanasi, each under the charge of a

Progress of Railways

	Route length (Km)			Running track	Passengers originating	Goods originating
	Electrified	Non-electrified	Total	(Km)	(lakh)	(lakh tonne)
1950-51	388	53,208	53,596	59,315	12,840	930
1960-61	748	55,499	56,247	63,602	15,940	1,562
1965-66	2,423	55,976	58,399	68,375	20,820	2,030
1970-71	3,706	56,084	59,790	71,669	24,311	1,965
1975-76	4,659	55,557	60,216	74,255	29,452	2,233
1980-81	5,345	55,895	61,240	75,860	36,125	2,200
1981-82	5,473	55,757	61,230	75,964	37,044	2,458
1982-83	5,815	55,570	61,385	76,197	36,554	2,560
1983-84	5,971	55,489	61,460	76,407	33,252	2,580

India's Long Distance Trains

The Indian Railways run on an average more than 820 Mail/Express trains connecting important cities, state capitals, pilgrim centres, etc. Their average speed is 47.1 km per hour (BG) and 32.8 km per hour (MG). Some of the trains cover distance of over 3,000 km in one scheduled trip. The important long distance trains between selected pairs of points are:

Number and Name of the Train		*Pairs of Stations between which runs*	*Distance (Km)*
901/902	*Express*	*Guwahati-Trivandrum (Weekly)*	*3,974*
907/908	*Himasagar Express*	*Jammu-Kanyakumari (Weekly)*	*3,726*
125/126	*Kerala Express*	*New Delhi-Tvm. (Bi-Weekly)*	*3,054*
911/912	*Express*	*Gorakhpur-Cochin Harbour Terminus (Weekly)*	*2,991*
903/904	*Express*	*Ahmedabad-Tvm (Weekly)*	*2,720*
127/128	*Karnataka Express*	*New Delhi-Bangalore (Bi-weekly)*	*2,444*
175/176	*Neelachal Express*	*Puri-New Delhi (3 days a week)*	*2,136*
81/82	*Jayanti Janata Express*	*Bombay VT-Kanayakumari (Daily)*	*2,149*
15/16	*Grand Trunk Express*	*New Delhi-Madras (Daily)*	*2,188*
121/122	*Tamil Nadu Express*	*New Delhi-Madras (4 days a week)*	*2,188*
171/172	*Express*	*Jammu Tawi-Bombay Central (Bi-weekly)*	*1,973*
59/60	*Gitanjali Express*	*Bombay-Howrah (5 days a week)*	*1,968*
173/174	*Himgiri Express*	*Howra-Jammu Tawi (3 days a week)*	*1,967*
155/156	*Tinsukia Mail*	*New Delhi-Guwahati (Daily)*	*1,937*
81/82 and 103/104	*Delux Express*	*Amritsar-New Delhi-Howrah (5 days a week)*	*1,889*
3/4	*Frontier Mail*	*Amritsar-Bombay Central (Daily)*	*1,836*
25/26	*Delux Express*	*Amritsar-New Delhi-Bombay Central (Bi-weekly)*	*1,835*
1/2	*Kalka Mail*	*Kalka-Howrah (Daily)*	*1,709*
123/124	*Andhra Pradesh Express*	*New Delhi-Secunderabad (4 days a week)*	*1,665*
141/142	*Coromandal Express*	*Madras-Howrah (Daily)*	*1,663*
145/146	*Navajivan Express*	*Ahmadabad-Madras (2 days a week)*	*1,952*
101/102	*Rajdhani Express*	*Howrah-New Delhi (4 days a week)*	*1,437*
151/152	*Rajadhani Express*	*Bombay Central-New Delhi (5 days a week)*	*1,384*
9/10	*Mail*	*Bombay-Madras (Daily)*	*1,279*
153/154	*Jayanti Janata Express*	*New Delhi-Harsuni (Daily)*	*1,173*
19/20	*Konarak Express*	*Bhubaneswar-Secunderabad (Daily)*	*1,144*
181/182	*Sarvodaya Express*	*New Delhi-Ahmadabad (Bi-weekly)*	*1,092*
191/192	*Magadh Express*	*New Delhi-Patna (Daily)*	*992*
167/168	*Malwa Express*	*New Delhi-Bhopal-Indore (3 days a week)*	*969*
505/506	*Ashram Express (MG)*	*Delhi-Ahmadabad (4 days a week)*	*934*
101/102	*Minar Express*	*Secunderabad-Bombay (Daily)*	*900*
15/16	*Chetak Express*	*Delhi-Udaipur*	*739*
57/58	*Kanchanjunga Express*	*Howrah-New Jalpaiguri (6 days a week)*	*693*
91/92	*Prayag Raj Express*	*New Delhi-Allahabad (Daily)*	*627*
509/510	*Mandor Express (MG)*	*Jodhpur-Delhi (Tri-weekly)*	*626*
119/120	*Gomti Express*	*New Delhi-Lucknow (6 days a week)*	*503*
135/136	*Vaigai Express (MG)*	*Madras-Madurai Egmore (Daily)*	*402*
507/508	*Marwar Express (MG)*	*Ahmedabad-Jodhpur (Bi-weekly)*	*455*
79/80	*Taj Express*	*New Delhi-Gwalior via Agra (Daily except Wednesday)*	*317*
501/502	*Pink City Express*	*Delhi-Jaipur*	*308*

General Manager engaged in the manufacture of rolling stock. In addition, a Wheels and Axles Plant being set up at Bangalore under the charge of a General Manager is expected to commence production of wheels & axles by the latter half of 1982. There is also a Research, Designs and Standards Organization at Lucknow which is an attached office of the Railway Board and is headed by a Director General.

Total Assets. Indian railways had total assets of Rs.9,401.4 crore on 31 March 1984 and a staff strength of over 15.9 lakh regular employees. During 1983-84 they carried 332.50 crore passengers and 25.80 crore tonnes of freight traffic. Indian railways run about 11,000 trains every day, connecting 7,068 stations. The Indian railways operate on three gauges—broad gauge, metre gauge and narrow gauge. The operational fleet consisted of 10,211 locomotives, 37,946 coaching vehicles and 3,74,756 wagons.

The progress of the government railways for selected years since 1950-51 has been given in tables.

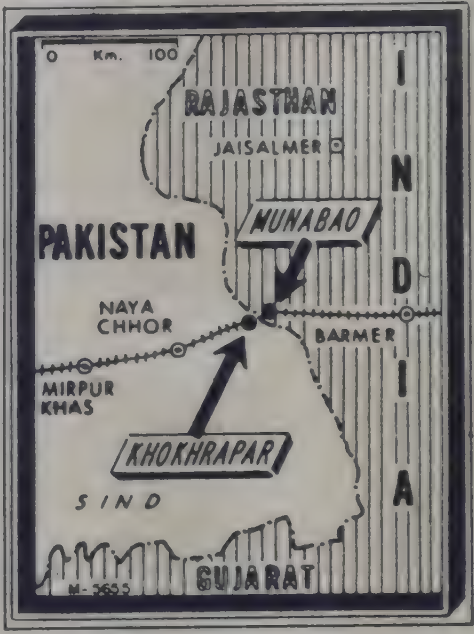
The tables also show the trend towards modernization of railways. The electrified route length has increased more than 14 times since 1950-51. Steam locomotives, production of which was discontinued from 1972, are being gradually replaced by electric and diesel locomotives.

Since the beginning of the five-year plans in 1950-51, the number of diesel locomotives has gone up by more than 165 times, from a mere 17 in 1951 to 2,805 in 1983-84 and of electric locomotives by more than seventeen times i.e., from 72 to 1,194.

Diesel and electric locomotives together carried 95.7 per cent of the total goods traffic in terms of gross tonne km in 1983-84. Modernization and improvement of signalling and telecommunications have also made much headway. In 1983-84, a multi-channel microwave link was in operation for 13,793 km. Automatic signalling was provided on 1,507 km track.

Great Progress. Indian railways have made remarkable progress in attaining self-sufficiency in equipment and stores. At the beginning of the era of planned development in 1950-51, Indian railways were importing about 23 per cent of their equipment and stores. Such imports were reduced to 8.2 per cent in 1983-84.

Indo - Pak Rail Link



India and Pakistan have agreed to reopen the Khokhrapar-Munnabao checkpost on Rajasthan-Sind sector and to restore the rail link on this section.

This was decided at the two-day meeting of officials of the two countries which concluded at New Delhi in May 22, 1986. A railway delegation from India would visit Islamabad during which the Pakistani side was expected to give a specific time-table for this purpose.

It appears that the agreement was later bogged down in political differences between the two countries. The line will certainly be reopened in a better climate, it is hoped.

There has also been a progressive increase in expenditure on development o railways under the five-year plans. It was Rs.422.26 crore, Rs.1,043.70 crore, Rs.1,685.8 crore, Rs.1,420.88 crore and Rs.1,491.93 crore in the First, Second, Third, Fourth and Fifth Plans respectively. The expenditure in the first four years of the Sixth Plan: Rs. 4,711.9 crore.

Railway locomotives are built in the Chittaranjan Locomotive Works (CLW), Chittar

Rolling Stock

Year	Number of locomotives				Number of coaching vehicles[1]	Number of Wagons
	Steam	Diesel	Electric	Total		
1950-51	8,120	17	72	8,209	19,628	2,05,596
1960-61	10,312	181	131	10,624	28,439	3,07,907
1965-66	10,613	727	403	11,743	32,922	3,70,019
1970-71	9,387	1169	602	11,158	35,145	3,83,990
1975-76	8,496	1803	796	11,095	36,821	3,95,250
1980-81	7,469	2403	1036	10,908	38,327	4,00,946
1981-82	7,245	2520	1104	10,869	37,960	3,92,062
1982-83	6,292	2638	1157	10,087	37,539	3,83,429
1983-84	6,212	2805	1194	10,211	37,946	3,74,756

[1] Includes Electric Multiple Units (EMU)

anjan, and the Diesel Locomotive Works (DLW), Varanasi both of which are administered by the Ministry of Railways. CLW produced its first engine in 1950-51 and achieved a production level of 173 locomotives per year during 1959-60.

In December 1971, it produced its last steam engine, taking its total production to 2,351 units before it switched over to the manufacture of mainline electric and diesel hydraulic shunting locomotives. During the same period, most of the metre gauge steam engines were built by TELCO, a private sector firm.

Electric Loco. CLW turned out its first DC electric loco in 1961-62 and the first diesel-dydraulic shunter in 1967-68. Overall production till March 1984 totalled 978 electric locos, 471 diesel-hydraulic locos. This included 4WAP-1 electric locos fitted with two stage suspension flexi-coil bogies having a speed potential of 130 km/hr and 4 medium hp diesel electric shunters (WDS-8) for steel plants.

Diesel electric main line locos as also heavy duty shunters are built by DLW. This unit commenced production of broad gauge locomotives in 1963-64 and from 1968-69 it also started manufacturing metre gauge locomotives. No diesel electric locos have been imported since then. Upto March 1984 this unit had delivered 1,860 locomotives of various types. The bulk of the passenger service vehicles are manufactured in the Integral Coach Factory (IFC), Perambur, which is also administered by the Ministry of Railways. ICF's production is supplemented by two public sector undertakings—Bharat Earth Movers Ltd., and Jessops. These three together meet the entire requirements of the railways.

Passenger Coaches. Since ICF commenced production of passenger coaches in 1955-56, it had turned out 15,002 passenger service vehicles (fully furnished coaches) till March 1984. The passenger service vehicles produced by ICF and Jessops include EMUs. The electrical equipment for these are manufactured by another public sector unit—Bharat Heavy Electricals Ltd.

The railways' requirement of wagons is met mostly by the industry which includes units both in the public sector and private sector. Three railway repair workshops supplement the production of these units. In 1983-84, production totalled 17,141 wagons in terms of 4-wheelers, of which 16,362 were turned out by the industry.

Railways' requirements of wheels and axles are at present met only in part by indigenous production and the rest are being procured from foreign manufacturers. In order to prevent heavy drain on foreign exchange, the railways are setting up a wheel and axle plant at Yelahanka, Bangalore. This plant will produce approximately 70,000 wheels and 23,000 axles per year.

Passenger Traffic. The passenger traffic was over 332.5 crore in 1983-84 as against 128.4 crore in 1950-51. The earnings from the second class passengers were Rs.1,206 crore in 1983-84 as compared to Rs.84.47 crore in 1950-51.

The average rate charged per passenger for every kilometre was 4.93 paise (ordinary) and 6.93 paise (mail/express) for second class, 23.4 paise for first class and 49.9 paise for air-conditioned class.

The task of providing improved amenities is a continuous process. Out of 7,065 stations, 5,925 have been electrified. Catering facilities have been provided at 3,253 stations and on 104 pairs of trains.

The railways carried about 25.8 crore tonnes of goods in 1983-84 as compared to 9.3 crore tonnes in 1950-51. The freight revenue was Rs. 3,243 crore in 1983-84. To speed up movement of freight, many fast goods trains have been introduced on important routes.

To provide door-to-door service, a container service is also operated. The containers are carried on guaranteed schedules by fast goods trains. A freight forwarder scheme for movement of goods in wagons was in operation on 65 routes during 1983-84.

Welfare. Several schemes are in operation for the welfare of the railway employees who numbered 17.9 lakh (15.9 lakh regular and 2.0 lakh casual) in 1983-84 as against 9.1 lakh in 1950-51. Among the important amenities are the provision of housing and medical facilities, holiday homes at hill stations and schools and hostels. Between 1951 and 1984 (31 March) about 5.92 lakh residential units, 106 hospitals and 623 health centres were maintained for the staff. The number of holiday homes at hill stations and other places was 33.

The Research, Design and Standards Organisation (RDSO), Lucknow, set up in 1957 has helped the railways in indigenization in all fields of railway operations and has also made it possible for them to export a number of items of railway equipment.

The railways have four major training institutions. These are Railway Staff College, Vadodara; Indian Railways Institute of Advanced Track Technology, Pune; Indian Railway Institute of Signal Engineering and Telecommunications, Secunderabad; and Indian Railway Institute of Mechanical and Electrical Engineering, Jamalpur. These institutes also train foreign officials.

ROADS AND WATERWAYS

With more than 15.45 lakh km long roadways, India has one of the largest road networks in the world. Her navigable waterways come to around 5,200 km, but mechanised crafts make little use of them. Only ⅓ of India's major riverways are being used for mechanised navigation.

The total road length comprising national highways, state highways and other state PWD roads was 15,45,891 km in 1981-82. The road development programme envisaged under the Sixth Plan laid emphasis on a coordinated and balanced development of road network in the country under (i) primary road comprising national highways, (ii) secondary and feeder road system covering state highways and major district roads and (iii) rural roads including village roads and other district roads. Substantial outlays are proposed for road development in the rural and the tribal areas.

In the first three plans and the three Annual Plans, a sum of Rs.1,134.86 crore was spent on road development. The Fourth Plan and Fifth Plan expenditure was Rs.826.94 crore and Rs,1,348 crore respectively. The outlay for road development under the Sixth Plan for central sector was Rs.827 crore and for state sector Rs.2,612 crore.

National Highway. The Government is directly responsible for the national highways system. In 1947, approximately 2,500 km of missing road links and thousands of culverts and bridges, which did not exist were required to be constructed to have an integrated and continuous network. There was an increase in the missing road links owing to the addition of new roads to the national highways system in later years.

Upto 31 March 1983 road links including diversions constructed totalled 4,494 km, and improvement to low grade sections completed in 22,959 km, widening and strengthening single lane sections to double lane carriageway done in 21,848 km and 388 major bridges constructed. The present national highways system includes a total road length of 31,710 km. An outlay of Rs.660 crore was provided in the Sixth Plan for the development of national highways.

State highways and district and rural roads are the responsibility of state governments and are maintained by various agencies in the states and union territories. Roads are being developed in rural areas under the minimum needs programme the objective being to link all villages with a population of 1,500 and above and 50 per cent of the villages with a population of 1,000-1,500 with all-weather roads by 1990. The Government also assists in the development of certain

Length of Roads in India

State/Union Territory	Surfaced Roads (km)	Unsurfaced Roads (km)	Total (km)
1. Andhra Pradesh	65,457	63,228	1,28,685
2. Assam	8,166	51,413	59,579
3. Bihar	28,693	54,950	83,643
4. Gujarat	44,355	16,142	60,497
5. Haryana	20,716	3,234	23,950
6. Himachal Pradesh	4,580	15,967	20,547
7. Jammu & Kashmir	7,428	4,369	11,797
8. Karnataka	66,262	46,531	1,12,793
9. Kerala	24,191	82,822	1,07,013
10. Madhya Pradesh	55,525	51,792	1,07,317
11. Maharashtra	86,766	93,429	1,80,195
12. Manipur	1,972	3,349	5,321
13. Meghalaya	2,761	2,450	5,211
14. Nagaland	878	5,409	6,287
15. Orissa	16,900	1,03,297	1,20,157
16. Punjab	35,702	10,459	46,161
17. Rajasthan	39,748	32,731	72,479
18. Sikkim	1,052	59	1,111
19. Tamil Nadu	1,03,711	29,015	1,32,726
20. Tripura	1,293	6,680	7,973
21. Uttar Pradesh	72,473	80,605	1,53,078
22. West Bengal	25,393	31,595	56,988
23. Andaman & Nicobar Islands	618	64	682
24. Arunachal Pradesh	2,060	10,693	12,753
25. Chandigarh	125	—	125
26. Dadra & Nagar Haveli	196	50	246
27. Delhi	8,670	7,120	15,790
28. Goa, Daman & Diu	3,982	4,154	8,136
29. Lakshadweep	—	—	—
30. Mizoram	1,138	1,370	2,508
31. Pondicherry	1,148	995	2,143
Total	7,31,959	8,13,932	15,45,891

National Highways 31,710 Km.

The total length of National Highways in 1984-85 has been 31,710 km including 285 km length of newly declared NH. No, 56 linking Lucknow–Varanasi via Sultanpur and Jaunpur in UP and NH. No. 4B linking Nhava–Sheva Port complex with NH. 4 and NH. 17. Development of this system to provide for free flow of traffic by constructing missing road links, bridges over unbridged crossings, improving low grade sections, widening and strengthening the pavements of existing highways, improving geometrics, etc., is receiving attention.

Expenditure of about Rs. 1364.40 crore was incurred on development (original) works of National Highways from the inception in 1947 upto 31-3-1984. An amount of Rs. 165 crore is expected to be spent on development and Rs. 70 crore on maintenance of National Highways in the country during 1984-85.

***Roads of Inter-State Importance:** Initiated in May, 1954, the scheme seeks to promote inter-state road communication facilities, as also to help the States in their economic development through construction of road/bridges of Inter-State or Economic Importance. An amount of Rs.571.67 lakh has been released during the year 1983-84 for this scheme. A provision of Rs.7.00 crore exists in Budget Estimate for 1984-85.*

***State Road Transport Undertakings:** Together 57 State Road Transport Undertakings commanding a fleet strength of 82,259 vehicles are catering needs of 4 crore passengers every day. Performance of these STUs has been engaging the attention of the Central Government/State Govts. State Govt. have appointed a high powered committee to make in-depth studies of the performance of their undertakings with a view to improve their physical and financial performance. A quarterly review of performance is also undertaken at the Central level by the Planning Commission of these STUs.*

The Govt. of India assists those STUs which have been registered under the Road Transport Corporation Act, 1950 through capital contribution in the shape of loans of matching basis i.e. 50% of the amount provided by the Central Govt. The work relating to grant of capital contribution has come to this Ministry from the Railways w.e.f. 1-4-1983. An amount of Rs.38.50 crore was disbursed during 1983-84, as against the provision of Rs.40 crore in Budget Estimate. In 1984-85, an amount of Rs.30.75 crore has been disbursed upto 31-12-1984.

selected roads in the states.

Border Roads. The Border Roads Development Board was set up in March 1960, for accelerating economic development and strengthening of defence preparedness through rapid and co-ordinated improvement of road communication in the north and north-eastern border areas. The development activities now encompass Rajasthan, Jammu and Kashmir, Himachal Pradesh, Madhya Pradesh, Sikkim, Assam, Uttar Pradesh, Meghalaya, Nagaland, Tripura, Manipur, Bihar, Andaman and Nicobar Islands, Arunachal Pradesh, Mizoram and also Bhutan.

Border Roads Organisation (BRO) executes its works departmentally (unlike MES, CPWD, etc., who execute works through contracts. The BRO is the largest single departmental undertaking for construction of roads. It is a self-sufficient force, mechanised and mobile, and during national emergenceis provides engineering support to the Army.

Transport. Most of the states and union territories have nationalized passenger transport in varying degrees. In the country as a whole, 60 per cent (estimated) buses were being run by the public sector undertakings. Statutory corporations have been set up under the Road Transport Corporation Act, 1950 in several states.

In other states, the nationalised services are operated by departmental or municipal corporations or registered companies. In most of the big cities, bus service are state-owned. Goods transport is almost exclusively in the private sector.

For removal of constraints on the movement of goods by road transport, a scheme of national permits for public carriers was introduced in 1975. Under the scheme, the Government has specified the number of national permits each state/union territory can issue. The maximum number of permits to be issued initially was fixed at 5,300 which was raised to 8,300 in 1979, 16,600 in 1980 and now to 24,900. So far, about 32,100 national permits have been issued.

For the implementation of the zonal permit schemes, reciprocal agreements are concluded between various participating states forming a zone. The deliberations and the agreements are done under the auspices of Inter State Transport Commission (ISTC). The agreements are revised/reviewed as and when necessary.

Vehicles Fleet. Passenger vehicles fleet in the public sector increased to over 82,987 in 1984 from 35,193 in 1970. About 4.09 crore commuters are carried every day by the state transport undertakings which employ about 6.08 lakh people.

To ensure co-ordination between the central and state policies and operation of the different modes of transport, the Government has set up a Transport Development Council. The Inter State Transport Commission, a statutory body, is responsible for the development, co-ordination and regulation of road transport services on inter-state routes. As a result of the efforts made by the Commision, almost all the states and union territories now have reciprocal arrangements for operation of goods and passenger service of inter-state routes. They have introduced zonal permit schemes for the unhindered movement of limited numbers of public goods carriers over the national and state highways on payment of tax at a single point.

An Association of State Road Transport Undertakings, set up in 1963, co-ordinates the activities of 58 state undertakings and helps to secure procedural uniformity, higher standards of service and economic operation.

Inland Waterways Authority

The Union Government in October 1986 constituted an Inland Waterways Authority of India to facilitate development of inland water transport in the country.

Mr. Xavier Arackal of Kerala assumed charges as chairman of the authority.

The authority, as the apex body will be responsible for the planned development, maintenance and regulation of the national waterways for inland water transport.

According to official sources the authority will initially give attention to the Allahabad-Haldia stretch of Ganga-Bhagirathi-Hooghly, which has been declared as a national waterway.

In the Seventh Plan, an outlay of Rs. 155 crore has been earmarked for the development of inland water transport in the central sector alone, which includes an outlay of Rs. 25 crore for the development of national waterways.

The waterways authority has been constituted under the Inland Waterways Authority of India Act, 1985.

Mr. Arackal has a legal and personnel management background having obtained a postgraduate degree in social and industrial relations from Loyolo University in Chicago, United States. He has served as a member of the Kerala Assembly during 1977-80 and of the Lok Sabha from 1980 to 1984.

Rivers. India has about 5200 km of major rivers, which are navigable by mechanised craft, but only 1,700 km is actually utilised. As regards canals, the available length is 4,300 km but only a length of 485 km is suitable for mechanised craft, of which only 331 km is being actually utilised.

Important among the navigable rivers are the Ganga and the Bhramaputra and their tributaries, the Godavari, the Krishna, the

Mahanadi, the Narmada and the Tapti and their canals; the backwaters and canals of Kerala; the Buckingham canal in Andhra Pradesh and Tamil Nadu, the Cumbarjun canal and Mandovi and Zuvari rivers in Goa and the network of tidal rivers in Sunderbans.

Inland water transport is a state subject. The development schemes are mostly taken up by the states as centrally sponsored schemes. In the Sixth Plan, provision of Rs,45 crore is made for development of inland water transport. The Central Inland Water Transport Board, New Delhi, formulates policy for the development of inland water transport in the country.

Waterways. The Inland Water Transport Directorate of the Ministry of Shipping and Transport is responsible for the development of inland waterways. It gives technical advice to the states also. The Directorate has a regional office at Patna engaged in hydrographic surveys and marking navigable channels of the rivers. A sub-office of this regional office has been working at Guwahati since 31 March 1984.

The National Waterways (Allahabad – Haldia stretch of Ganga–Bhagirathi–Hoogly Rivers system) Act, 1982 provides that it shal be the responsibility of the Central Government to regulate and develop this waterway and to secure the efficient utilisation of this waterway for shipping and navigation. Rive services in the Haldia–Farakka stretch have already been introduced.

A proposal to set up Inland Waterway Authority of India for development, maintenance and management of waterways a recommended by national transport polic committee has been realized.

The Central Inland Water Transport Corporation, a Government undertaking set u in 1967 at Calcutta, operates the river services carrying goods between Calcutta an Assam. It is also operating river service between Calcutta and Farakka, and Calcutt and Cachar. Its other activities include shipbuilding and ship-repairing.

SHIPPING RECESSION ON

Indian Shipping has been facing rough weather since 1974 when it was caught in the tidal wave of global recession in merchant shipping. India has the largest merchant shipping fleet in the third world. In shipping tonnage she ranks sixteenth in the world.

The Seventh Five–Year Plan envisage a net acquisition of 3.64 million Gross Registered Tonnage to Indian Shipping which stood at 6.36 in GRT at the beginning of the plan period. Of this 3.63 m GRT has already been acquired between 1st April 1985 and 31 Dec. 1985. Another 7.5 m GRT has been ordered for acquisition upto 31-10-1985.

Recession: The Shipping Industry has been experiencing prolonged recession since the close of 1974, except for a brief revival during 1980-81. The shipping the world over is characterised by over-tonnaging and inadequate cargo. The technological revolution in shipping is evident from phenomenal increase in containerised cargo movement and also increase in modern fuel economy vessels. There is keen competition from non-Conference Lines in general cargo movements in almost all trades. India is conscious of these factors and is trying t keep pace with the changed situations i shipping. As a beginning, the three majo Indian lines have formed a Consortium t provide direct container services on for nightly basis to U.K./Continent.

The share of Indian Shipping in the carriage of our overseas cargo for the yea 1984-85 has been worked out at 37.1% on th basis of the information received from a Major and Minor Ports.

The National Shipping Board was reconst tuted under the Chairmanship of Shri M. Krishna, in September, 1983. Thhe Board ha celebrated its Silver Jubilee at New Delhi o 8th May 1984.

Marine Districts. The entire coa line of India has been divided into thre Mercantile Marine Districts, viz., Bomba Calcutta and Madras, each under the charg

At a Glance

No. of sailing vessels (including mechanised) registered in India : 14300
No. of sailing vessels transactions : 1150
No. of ship casualties : 54
No. of sailing vessels casualties : 250

of Principal Officers. Besides there are six sub-offices of the Mercantile Marine Department located at Jamnagar, Mormugao, Cochin, Visakhapatnam, Tuticorin and Port Blair, each under the charge of an Engineer-cum-Ship Surveyor.

The Mercantile Marine Departments are responsible for administration of Merchant Shipping Act, 1958 and rules and regulations made thereunder, conduct of examinations for the grant of certificate of competency to the Navigating Officers and Engineers, inspection of life saving appliances, fire appliances, installation of Radio Telegraphy/Telephony Equipment, carriage of grains cargoes, dangerous goods, tonnage measurement of ships, their surveys and inspection for the purpose of issue of various statutory certificates, etc.

Shipping Lines. There are 69 shipping companies in the country in of which 18 are engaged exclusively in the coastal trade, 43 in overseas trade and the remaining 8 both in coastal and overseas trade. The Government shipping companies viz. *Shipping Corporation of India (SCI) and the Mogul Line Ltd.*, carry on both the coastal and overseas trade.

The Shipping Corporation of India with an authorized capital of Rs. 100 crore and paid up capital of Rs. 70 crore earned a profit of Rs. 2.27 crore in 1984-85 as against a loss of Rs. 51.64 crore during 1983-84. The gross earnings for the year 1984-85 was Rs. 616.37 crore as against Rs. 520.56 crore during the previous year.

SCI is one of the largest shipping lines in the world. The Corporation owns a diversified fleet comprising 146 vessels of 3.24 million GRT and 5.36 million DWT. In addition to this, 13 vessels of 0.32 million GRT and 0.56 DWT are on order in shipyards in India and abroad.

The Mogul Line Limited has an authorized capital of Rs. 25 crore and the paid-up capital of Rs. 19.01 crore.

The Company is operating Haj service, Konkan passenger service and overseas tramp service. Haj service is being operated by the company by chartering the vessel m.v. Akbar from A & N Administration and the Konkan service is run by the company with its two vessels, Konkan Sevak and Konkan Shakti. On tramp trade, 11 vessels are being deployed. The company also acts as co-ordinators of Indo—Pak Shipping Service.

The company has a fleet of 13 vessels of 1.61 lakh GRT and 2.63 lakh DWT. Besides 4 vessels of 1.05 lakh DWT are on order on Indian Shipyards.

Government has taken a decision to merge Mogul Line Limited with the Shipping Corporation of India Limited and the formal merger of the two companies is expected to

Indian Tonnage on 30-11-1985

	Coastal		Overseas		Total	
	No. of ships	G.R.T. (in lakh)	No. of ships	G.R.T. (in lakh)	No. of ships	G.R.T. (in lakh)
1. Net operative tonnage as on 30-11-1984.	94	3.52	335	59.70	429	63.22
2. Tonnage added from 1-12-84 to 31-10-1985	22	3.03	17	4.39	39	4.70
3. Tonnage scrapped/sold during 1-12-1984 to 31-10-1985	5+	0.27	35	3.76	40	4.04
4. Net addition	17	0.02	−18	0.6	−1	0.6
5. Net operative tonnage as on 30-11-1985	111	3.55	317	60.33	428	63.88

The number of ships on order on Indian and foreign shipyards as on 31-10-1985 was 31 comprising 7,50,442 GRT.

take place during the first half of the financial year 1985-86.

Private Sector. The major private sector shipping companies which own one lakh or more GRT are the Scindia Steam Navigation Company Ltd. (5.42 lakh GRT), Great Eastern Shipping Company Ltd. (4.23 lakh GRT), India Steamship Company Ltd. (2.02 lakh GRT), South India Shipping Corporation Ltd. (1.51 lakh GRT), Camoder Bulk Carriers Ltd. (1.38 lakh GRT), Chowgule Steamships Ltd. (1.60 lakh GRT), Dempo Steamships Ltd. (1.38 lakh GRT) and Ratuaban Shipping Company Ltd. (1.38 lakh GRT).

Almost all the coastal trade is carried by national vessels. With the progressive normalisation of relations with Pakistan and China, trade with these countries has been resumed and Indian ships have started calling at their ports. India has ratified the UN convention on Code of Conduct for Liner Conferences, which was signed by India on 14 February 1978.

Training Facilities. There are six training establishments for Merchant Navy Officers and Ratings. T. S. Rajendra at Bombay imparts pre-sea training to navigation cadets. The Lal Bahadur Shastri Nautical and Engineering College, Bombay conducts post-sea instrumental courses in navigation and engineering.

The Directorate of Marine Engineering Training at Bombay and Calcutta imparts training to marine engineering cadets. *Bhadra* at Calcutta, *Mekhala* at Vishakapatnam and *Navlakshi* at Navalakshi provide pre-sea training for deck and engineering ratings and *Bhandaries*. Training in three rating institutions has been stopped for the time being following prevailing unemployment amongst the seamen.

Register of Ships. India's national classification society – Indian Register of Shipping (IRS) – came into being in March 1975.

From a humble beginning IRS had 295 ships in its class aggregating 31.1 lakh GRT comprising 173 dual class and 122 single class vessels as on 30 April 1984. Ninety-nine vessels are being built under its single classification and 86 under dual classification.

IRS has entered into agreements of mutual co-operation with various international classification societies for technical back-up for varied services and also to carry out surveys anywhere in the world. It has been appointed by the Government as one of the assigning authorities for Load Line. It is also authorised to carry out cargo ship safety construction surveys.

With a view to augmenting the inadequate ship repair facilities in the country, a 15–year perspective plan for ship repair facilities in India, was drawn up in May, 1982 with the help of consultants. The recommendations of the consultants were considered by an expert group and accepted by Government for implementation in two phases: the first phase is to be completed in the 7th Plan.

Ship Building. Established in 1946 the *Hindustan Shipyard Limited* was taken over by Government in 1952. The paid up capital of the company as on 31-3-85 was Rs. 38.38 crore as compared to Rs. 31.31 crore as on 31-3-83 incurred a loss of Rs. 13.32 crore in 1984-85.

During the year 1984-85, the shipyard has laid keel for 7 vessels which include 4 OPSSVs and 1 drill ship for ONGC. The drill ship being built at HSL is the first of its kind being built indigenously. The shipyard has launched 5 vessels and delivered 2 vessels during the current year. The shipyard has also delivered two vessels i.e. M.V. Nandrat of 27000 DWT to M/s. Essars and M.V. State of Gujarat of 16700 DWT pioneer Class vessel to Shipping Corporation of India, up to 31-12-84.

THE COCHIN SHIPYARD project was sanctioned in 1971 and was completed in 1984. It is designed to construct ships of sizes upto 85,000 DWT and repair vessel of sizes upto 1,00,000 DWT. The rated capacity of the Yard is 1,50,000 DWT in shipbuilding and 1 million GRT in ship repair per annum on reaching optimum production.

The authorized and paid-up capital of the Company as on 31.12.1984 was Rs. 70.00 crore and Rs. 62.73 crore respectively.

The operating results of the Company showed a net loss of Rs. 13.25 crore for the year 1984-85 as against the loss of Rs. 10.3 crore for the previous year. The cumulative loss upto 31-3-1985 was Rs. 46.34 crore. The ompany anticipates a loss of Rs. 8.48 crore ring 1985-86.

Cochin Shipyard delivered their number ree vessel, Maratha Mission's to M/s Chowle Steamships Limited in March, 1985. Ship o. 004 was launched in January, 1985 and e keel of ship 005 was also laid in January, 85.

ajor Ports. A traffic of 106.74 million nnes was handled by the Major Ports uring the year 1984-85. In the current year pto Jan. 1986, the Major Ports together have andled 97.85 million tonnes against the affic of 86.57 million tonnes in the corresonding period last year.

There are eleven major Ports in the ountry, Calcutta, Paradip, Visakhapatnam, adras and Tuticorin on the East Coast and ochin, New Mangalore, Mormugao, Nhava heva, Bombay and Kandla on the West oast. Out of these Nhava Sheva Port is at the onstruction stage. Development and mangement of these ports is the responsibility of the Govt. of India. The Indian Ports Act, 1908 provides the statutory authority for management while the Major Port Trust, Act, 1963 contains the statutory provisions for the constitution of Port Trust Boards and vesting in them the admininstration, control and management of the Major Ports.

In seven of the Major Ports (Bombay, Calcutta, Cochin, Kandla, Madras, Mormugao and Visakhapatnam) there are Dock Labour Boards which are statutory tripartite bodies set up under the Dock Workers (Regulation of Employment) Act, 1948. In the three newer Ports of Paradip, New Mangalore and Tuticorin unified cargo handling systems are being tried. There is no operation at Nhava-Sheva.

The Ports of Bombay, Kandla, Madras, Mormugao, New Mangalore, and Tuticorin have earned surplus revenues during the past three years. However, the financial position of only Bombay, Kandla, Madras and Mormugao Ports could be considered satisfactory.

AIR INDIA FLYING HIGH

In spite of a global recession resulting in high operational costs, India's national flag carrier Air India earned a profit of Rs. 65 crore and Indian Airlines its highest ever profit of Rs. 58.75 crore during 1985-86.

In 1984-85 Air India had earned a profit of 4.69 crore and Indian Airlines Rs. 52.84 rore.

The increase in the profits of the two irlines had been made possible due to a umber of measures taken during 1985-86, laims Minister of State for Civil Aviation Mr. agdish Tytler.

In the case of Air-India, uneconomical tations like Sana, Cairo, Perth and Amsterdam had been closed, the office of regional irector, Australia and regional director, eneva, had been wound up and a saving of s. 2.5 crore had been effected through the emoval of a stop on the European route.

It was proposed to introduce the slip ystem in London and thereby save Rs. 1.5 rore.

New Routes. Among the new routes roposed to be introduced were: faster ervices to Tokyo omitting Hong Kong, introduction of Madras-Europe flights inclusion of Stockholm on India-Moscow flights, introduction of a daily A-310 service between Bombay and Singapore, stepping up of frequencies through Bangkok and increased operations through leased aircraft.

In the case of Indian Airlines, postage pre paid suggestion cards had been introduced and complaint counters set up for on-the-spot redress of passengers' grievances. Computerised ticketing was proposed to be extended to Lucknow, Bangalore and Hyderabad. An exercise was currently on to ascertain passenger preferences regarding the food served on board.

The third airline, Vayudoot, planned to add 44 more stations this year to the existing 52.

It would be starting its night mail and courier operations by which small packages and mail would be transported to all corners of the country The new services would be

Kanishka: Fifth Costly Craft

The book value of Emperor Kanishka which perished in the mid-air mishap on the Irish Coast on June 23, 1985, is put at Rs. 34.68 crore and in terms of value of aircraft, it ranked fifth among the Boeing 747's and eighth among all the aircraft of Air-India.

Among the Boeing 747s, the highest valued (Rs. 40.85 crore each) were Emperor Harsha Vardhana and Emperor Mahendra Verma followed by Emperor Krishna Devaraya (Rs. 38.36 crore), Emperor Samudragupta (Rs. 38.34 crore) and Emperor Kanishka (Rs.34.68 crore) in that order. The cost of the Air Bus aircraft, A 300 B4 is however, substantially more than that of Boeing 747.

Boeing 747's constitute the largest segment of Air-India's aircraft from the angle of both value and number. Out of the cost of Rs. 473.6 crore pertaining to 19 aircrafts of Air-India ten Boeings, including Kanishka, accounted for Rs. 307.62 crore or 65.0 per cent. Airbus aircraft 'Cauvery' was valued at Rs. 48.08 crore followed by Airbus Godavri (Rs. 45.07 crore) and Ganga (Rs. 44.94 crore).

Value of Aircraft

Sl. No.	*Type of Aircraft*	*(Rs. crore)*
AIR-INDIA		
	BOEING 707s	
1.	*Nangaprabhat*	*3.11*
2.	*Dhaulagiri*	*3.39*
3.	*Lhotse*	*3.88*
4.	*Annapoorna*	*5.60*
5.	*Kamet*	*5.87*
6.	*Trishul*	*6.05*
	Average	*4.65*
	BOEING 747s	
7.	*Emperor Shahjahan*	*18.37*
8.	*Emperor Rajendra Chola*	*17.92*
9.	*Emperor Vikramaditya*	*17.96*
10.	*Emperor Akbar*	*27.75*
11.	*Emperor Chandragupta*	*32.54*
12.	*Emperor Kanishka*	*34.68*
13.	*Emperor Krishna Devaraya*	*38.36*
14.	*Emerpor Samudragupta*	*38.34*
15.	*Emperor Mahendra Verman*	*40.85*
16.	*Emperor Harsh Vardhana*	*40.85*
	Average	*30.76*
	AIR-BUS A 300B4	
17.	*Ganga*	*44.94*
18.	*Godavari*	*45.07*
19.	*Cauvery*	*48.08*
	Average	*46.03*

SOURCE: Rajya Sabha Question Answer.

operated from Delhi, Jaipur, Bombay, Calcutta, Varanasi, Madras, Bangalore and Hyderabad.

The International Airports Authority of India also performed well during 1985-86 and recorded a net profit of Rs. 21.37 crore.

The Department would be finalising the modalities of the proposed private air taxi service soon.

Small civilian aircraft not exceeding a capacity of 10 seats, already registered in the country, could be operated as air taxis.

Air India. Air India was established under the Air Corporation Act, 1953, and has its headquarters at Bombay. The Board of Directors of Air India consists of 11 members.

The total capital of the Corporation is Rs. 148.73 crore, half of which is treated as Equity Capital and the other half as Loan Capital, bearing a rate of interest ranging from 6½ to 12%.

The Corporation has upto 30th September, 1985 contributed the following amounts in the Equity of its subsidiaries: Hotel Corporation of India Ltd.—Rs. 30.60 crore; Air-India Charters Ltd.—Rs. 5.00 lakh; Vayudoot Ltd.—Rs. 3.25 crore.

According to RBI formula, total foreign exchange earned/saved during April November, 1985 is estimated at Rs. 100.60 crore.

Air India's Boeing 747-237B aircraft VT-EFO (Emperor Kanishka) while on its scheduled flight AI-182 on the sector Montreal London Delhi Bombay crashed into the Atlantic Ocean off the Irish Coast on 23rd June, 1985. It had 307 passengers and 22 crew on board. The Government of India appointed a Court of Inquiry headed by

Air Travel More Popular

- Air travel within India has become more popular, registering an increase of 38 per cent since 1982-83, authorities said.

Passenger traffic at the four international airports managed by the International Airports Authority of India at Bombay, Calcutta, Delhi and Madras increased from 73 lakh in 1982-83 to 100 lakh during 1985-86.

At the Delhi airport, the quantum of domestic air passengers increased from 22 lakh in 1982-83 to nearly 30 lakh in 1985-86.

On an average, domestic air traffic has been going up by about 9 lakh annually since 1982-83.

There has been an increase in domestic air traffic, particularly in Bombay, where it went up from 30 lakh in 1982-83 to the estimated 40 lakh in 1985-86.

- **IA-Second Largest.** Indian Airlines is now the second largest domestic air carrier in the world outside the United States, according to the latest International Air Transport Association (IATA) statistics.

These figures relate to the number of passengers carried by the airline in 1985 when the Indian Airlines flew 8.56 million passengers on its domestic network. The only other airline outside the U.S. which carried more number of passengers than IA is Japan Airlines. In May 1986, IA flew 28,636 passengers daily on an average, the highest achieved so far.

Indian Airlines domestic network of 81,926 unduplicated route kilometres has been adjudged as the second largest among the non-US IATA carriers. The only non-US airline with larger domestic network is Air Canada.

The Indian Airlines domestic revenue tonne kilometres, (RTKMS) performed in 1985 which grew at the rate of 10.2 per cent has been adjudged as the third largest growth rate achieved among the top ten IATA domestic airlines. At present the total membership of IATA is 144 airlines as against 136 a year ago.

- **New Boards.** The Air-India and Indian Airlines are headed by Mr. Ratan Tata and Mr. Rahul Bajaj, respectively.

This is for the first time that both the major airlines will have prominent industralists as chairmen. The reconstituted boards also show that bureaucrats and politicians have been left out. Even the civil aviation secretary has been kept out of the boards.

Air-India: Mr. Ratan Tata (chairman), Mr. Sadanand Sethi, chairman of Vijaya Bank, Dr. Dharni Sinha, principal of Administrative Staff College, Hyderabad, Mr. Vivek Bharat Ram, industrialist, Mr. Arun Nanda, advertising expert, Air-India's managing and commercial directors, chairman of the International Airports Authority of India and managing director of Indian Airlines.

Indian Airlines: Mr. Rahul Bajaj (chairman), Mr. Rusi Modi, industrialist, Dr. Pratap Reddy, medical practitioner, Dr. Y. C. Deveshwar, chairman of the Welcome group of hotels, Dr. Francis Menezes, chairman of the Management Training Institute, Mrs. Rita Nanda, industrialist, Mr. A. R. Rangoonwala and managing directors of Air-India and Indian Airlines, chairman of the National Airports Authority and the director-general of tourism.

- **Managing Directors:** Air India: Capt. D. Bose; Indian Airlines: Capt. K. Chada, Vayudoot: Harsh Vardhan.
- **Merger:** A final action plan on the merger of Air-India and Indian Airlines would be ready by July, 1987.

It is hoped that the merger would result in savings of about Rs. 100 crore and ensure optimum utilisation of airlines resources.

There were several fields where both airlines were spending huge sums of money for common jobs and that more profits accrue if they worked under a joint set-up.

Justice B. N. Kirpal, to investigage the causes of the accident. The Court of enquiry has submitted its report to the Government of February 26, 1986.

The aircraft fleet of the Corporation as on 31st October 1985 consisted of: 1. Nine Boeing 747-237 aircraft; 2. Five Boeing 707-337 aircraft; and 3. Three Airbus A300-B4 aircraft.

A purchase agreement between Air-India and Airbus industrie was signed on April 8, 1985 for acquisition of six Airbus A-310 aircrafts. The total cost of the proejct is Rs.531.78 crore.

Air India thus earned the distinction of becoming the first airline in the world to operate a long ranged version of the Airbus A-310 in May 1986. The range of the aircraft is 6746 km.

Services. The weekly frequency of service operated on various routes effective from October 27, 1985 are given below:

India/USA (via UK), India/UK (Terminator), India/USSR, India/Continent, India/Japan, India/Singapore, India/Australia, India/East Africa, India/West Africa (via Nairobi), India/Zambia, India/Mauritious (via Seychelles once a fortnight), India/Gulf/Middle East, India/Zimbabwe (via Dar-es-Salam), India/USA Freighter*, India/Japan Freighter*, India/Europe Freighter*, India/UK Freighter*, India/Zurich Freighter.

Tourism Promotion. Air India's tourism division based at Delhi continues its efforts to promote tourist traffic to India in close co-operation with the Government of India. Tourism Department, ITDC, Indian Airlines, agents and hoteliers. It has handled 37 educational tours promoted by various overseas offices between April and October, 1985. To further promote India as a tourist destination as many as 491 media representatives visited India from April to October, 1985. Three study tours for journalists were particularly undertaken to promote South India, Goa, Aurangabad, Rajasthan as tourist destinations.

Air India has, meanwhile withdrawn the Boeing 707s which ushured in the jet age into India in February, 1960. The last commercial flight was operated on September 29, from Harare to Bombay. Air India had a total of 11 Boeing 707s. While 3 crashed and another 3 were sold. The remaining 5 were for sale in 1986.

Indian Airlines was set up under the Air Corporations Act, 1953 with an initial capital of Rs. 3.25 crore with its corporate headquarters at Delhi and four regional headquarters at Bombay, Calcutta, Delhi and Madras. Its functions are to provide air transport service for passengers, cargo and mail on its internal air network in the country and in seven nighbouring countries.

At present, it operates to a total of 73 stations including nine in foreign countries (Lahore and Karachi in Pakistan, Kathmandu in Nepal, Colombo in Sri Lanka, Male in Maldives, Dhaka and Chittagong in Bangladesh, Kabul in Afghanistan and Bangkok in Thailand).

The fleet composition of Indian Airlines as on 31 October 1985 is as follows:

Airbus—10 (8 A-300 B2 and 2 A-300 B4), Boeing 737—25, HS-748—11, F-27—8. Total 54.

An agreement was signed between Indian Airlines and Airbus Industrie on 15th March, 1986 for the purchase of 19 A-320 Airbus aircraft at a cost of Rs. 1238 crore. The aircraft will be delivered in 1989-90 and in the meantime, Airbus Industrie will provide aircraft on least to Indian Airlines to meet its capacity requirements. The 160-seater Airbus A-320, a replacement for the older Boeing 737s, has been selected as 'most modern, fuel-efficient and futuristic aircraft incorporating the latest fly-by-wire avionics'.

The year 1984-85 ended in the Corporation earning the highest ever net profit of Rs. 52.84 crore. The increase in operating profit from Rs. 90.71 crore in 1983-84 to Rs. 99.77 crore during 1984-85 was mainly due to increased operations commensurate with demand. The year 1984-85 witnessed wide upward fluctuations in the exchange rate of the US Dollar which had an adverse impact on the net profit of the Coporation. The net profit of Rs. 52.84 crore had been arrived at after absorbing an additional amount of Rs. 13.96 crore due to currency fluctuations.

Vayudoot was introduced into the country's air-map in January 1981 with an authorised capital of Rs. 25 crore. It incurred a loss of Rs. 60 lakhs during 1985-86 against a profit of Rs. 12 lakh in the previous year.

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* With leased aircraft.

The Feeder Airline which operated from 2 stations during 1986-87 crossed a quarter-million passenger mark, which indicated an increase of 42% over that of the previous ear. The cargo upliftment of the line also increased by 100%.

Vayudoot which started in a small way in the eastern regions has grown to own a fleet of 14 aircrafts including 10 Dorniers by the middle of 1986.

National Airports Authority to look after the management and development of nearly 100 domestic airports and civil enclaves was established in 1986. Headed by Air Marshal C. K. S. Raje, the Director General of Civil Aviation, as Chairman it became operational from 1st June.

All construction, maintenance, developmental and other operational functions were transferred to the new authority. It resulted in 0% of the total strength of the Director General of Civil Aviation being transferred to the authority. Assets worth around Rs. 120 crore was vested with the authority.

Helicopter Corporation known as 'Pawan Hans Ltd.' came into being in 1986. Registered under the Companies Act, 1956 on 15th of October 1985, it was meant to provide air-support services to meet the requirements of the petroleum sector, to operate services in inaccessible areas and difficult terrains, to operate tourist charters and provide intra-city transport.

'Pawan Hans' would have 48 helicopters in operation by February, 1988. It started with only 2 helicopters. By March 1987 it would have 19.

List of Civil Aerodromes in India maintained by Civil Aviation Department.

Major I-Aerodromes.

1. Ahmedabad.....(R)
2. Amritsar............(R)
3. Gawahati.......... (R)
4. Hyderabad.......(R)
5. Lucknow...........(R)
6. Nagpur..............(R)
7. Trivandrum......(R)

Major II-Aerodromes.

1.Agartala (R), 2. Aurangabad (R), 3. Bhubaneswar (F), 4. Bhuj (F), 5. Imphal (Tulihal) (R), 6. Jaipur (F), 7. Khajuraho (R), 8. Mangalore (F), 9. Panagarh (R), 10. Patna (R), 11. Ranchi (R), 12. Shillong (R), 13. Tiruchirappalli (R), 14. Udaipur (F), 15. Varanasi (R).

R – Regid Pavement. F – Flexible Pavement.

COMMUNICATION

India's communication network is one of the largest in the world. Nearly 1.5 lakh post offices serve more than 120 million homes spread over 24 states and 7 Union Territories. There are nearly 37,000 telegraph offices and 35 lakh telephone sets. In spite of the rapid expansion, the number of applicants waiting for telephone connections is not less than 8.5 lakh.*

The postal system, as we know it, was started in India by the East India Company. The first postage stamp was issued in Karachi in 1852. It was valid only in the Province of Sind. In 1854, the company constituted the Postal Service as a separate entity under a Director General and issued a postage stamp, on all-India basis. The first telegraph line was put up in India in 1853. It extended from Calcutta to Agra. The Posts and Telegraph system received statutory recognition under Act VI of 1898.

Growth of P and T. In 1864, there were 211 major and 451 minor post offices in the country, almost all of them confined to cities and major towns. They handled some 12 million postal articles a year. At the time of independence, on Aug. 15th, 1947, there were 22,116 post offices of various types in the country. Since independence, a systematic attempt has been made to see that every village in India had postal facilities.

In January 1985 the Ministry of Communications was bifurcated into two Departments: (1) Department of Posts and (2) Department of Telecommunications. Each

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* For Communication Revolution in India, see Special Feature of Part Three.

Department is headed by a Secretary to the Government of India. The Secretary (Telecommunications), who is overall incharge is assisted by an Additional Secretary (Telecommunications) and an Additional Secretary and Financial Adviser (Telecommunications) in regard to his functions and responsibilities for the wing comprising (i) Wireless Planning and Co-ordination, (ii) Overseas Communications Service (iii) Monitoring Organisation, (iv) Indian Telephone Industries Limited and (v) Hindustan Teleprinters Limited.

Postal Services. The total number of post offices in the country as on 31-3-1985 was 1,44,875 (15,286 in urban areas and 1,29,589 in rural areas). The average area and the population served per post office were 21.86 sq. km. and 4,736 respectively.

The total number of villages provided with mobile service at the end of the year stood at 70,211.

The total number of letter boxes in the country as on 31-3-1985 was 5,01,223 out of which 75,571 were in urban and 4,25,652 in rural areas.

The postal traffic continued to show steady growth. In the year 1983-84, the postal services handled nearly 1,138 crore pieces of mail, excluding money orders. There was a growth of nearly 60 crore in the year, the figure reaching 1,198 crore pieces of mail handled. The growth in the traffic of registered articles was 5.4% against 5.4% in the previous year. The total number of registered articles handled in the year was 3,043 lakh. Newspapers and periodicals still form a sizeable chunk of the total volume of mail.

Nearly 1,288 lakh inland money orders of the total value of Rs. 1,801 crore were issued; the commission realised on money orders was Rs. 61.2 crore; the average value of a money order was Rs. 139.78 (previous year's average—Rs. 131.96).

Returned Letter Offices. Returned Letter Offices (RLO) situated at different places in the country handled about 322 lakh pieces of mail having insufficient or illegible addresses. The staff could successfully locate the addresses and the senders in 53.27% and 21.71% cases respectively, the total percentage of success being 75 (approximately). Valuables worth Rs. 225 lakh were directed to the correct addresses or restored to their senders.

Ten Lakh Waiting For Telephone

- *It would not be possible for the Government to wipe out the waiting list for telephones in the Seventh Plan, the Minister of State for Communications, Mr. Ram Niwas Mirdha, told the Lok Sabha on April 8, 1986.*

Mr. Mirdha informed a member that the total number on the waiting list for the whole country as on January 31, 1986 was 9.97 lakh and the total number of telephone connections working in the country was 30.19 lakh as on the same date.

- *It was proposed to provide about 11 lakh telephone connections during the Seventh Plan, but resources constraints prevented the Government from clearing the waiting list. The demand for telephone connections by the end of the Seventh Plan assessed by the working group on communications appointed by the Planning Commission is 76.63 lakh.*
- *To meet the cost of installing such a large number of telephones, the assessed allocation needed was Rs. 13,763 crore at 1984 prices, but the actual allocation for the Seventh Plan was just over Rs. 4,000 crore.*

Earlier, the target for the expansion of the telecom had been to provide one public call office within every five square km. but resources constraints had made this difficult.

- *A total of 2,20,000 new lines are proposed to be added to various telephone exchanges throught the country during 1986-87. Of this, towns and villages accounted for 89,009 lines. Delhi alone will have 35,000 new lines.*

Seventeen cities and State capitals are connected to New Delhi through INSAT 1-B which has provided 1,741 communication channels.

The Departmental *Mail Motor Servic* functioned at 87 stations in the country durin the year 1984-85. During the year 20 addi tional vehicles were purchased and presse to service for efficient conveyance of mails the country. Departmental Mail Motor ervice was also introduced at the following ations in the country during 1984-85.

Jamshedpur, Raipur, Dimapur - Kohima oute.

Philately. Posts and Telegraph Dept. sued 31 stamps, presenting in themselves a dicious blend of various trends. Subjects ealt with were Forts of India, Freedom ighters, 23rd Olympics, Roses of India, Smt. ndira Gandhi (2 stamps).

One new Philatelic Bureau and five philac counters were opened bringing the numer of Philatelic Bureaux and Counters to 44 nd 146 respectively.

India is a member of the Universal Postal nion (a specialised agency of the United lations) comprising 167 member countries nd the Asian Pacific Postal Union (a Resricted Postal Union) with a membership of 19 ountries. India continues to be closely nvolved in the work of these two international postal organizations.

Savings Bank. The Post Office Savings ank maintained its position as the nation's argest Savings Bank with about 1,44,000 post ffices (1,29,000 in rural areas) providing ervice throughout the country.

On 31-3-'85, the aggregate investment in ll forms of National Savings amounted to Rs. 7,207 crore, as compared to Rs. 13,524 crore 1983-84, registering an increase of Rs. ,683 crore. These investments, except for s. 10,156 crore lying in Savings Certificates, re held in Savings, Cumulative Time Deposit, Recurring Deposit, Time Deposit, ixed Deposit and Public Provident Fund ccounts.

The limit for instant withdrawal at the ounter without the transaction having to ass through the supervisor was raised to Rs. 00 from Rs. 300 with effect from 1-1-84.

Extra-Departmental sub and branch post ffices were authorized to accept cheques r deposit with effect from 10-6-83.

The facility of withdrawal by cheque in avings accounts was extended to minor ccounts operated by guardians on their ehalf with effect from 9-1-84.

Telecommunication. The number f telegraph offices rose to 36,953 in 1983-84 from 35,890 in the previous year. At the end of the year, there were 492 Departmental Telegraph Offices, 33,842 Combined Departmental Telegraph Offices and 2,619 Licenced Telegraph Offices working under the Railway and Canal administrations.

Also, there were 3,033 Licenced Telegraph Offices working exclusively for the use of Railway and Canal administrations. Thus, the total number of all types of telegraph offices, as on 31-3-1983, stood at 39,986.

Seven hundred and sixty-nine lakh inland telegrams were booked during the year (previous year's figure 753 lakh), of which 10.2% were on state business and 1.1% on press business.

About one hundred and forty lakh messages were booked and 27.6 lakh were communicated over the phones.

About sixty-nine lakh greeting telegrams were transmitted during the year. Of these 0.80 lakh were deluxe telegrams.

The number of telegraph offices which provided this service was 14,953 on 31-3-1984.

Telephone Systems. The switching capacity in the country reached 30.53 lakh lines with the addition of 2.26 lakh lines during 1983-84. There was also a net addition of 2.02 lakh direct exchange lines bringing the total direct exchange lines to 26.67 lakh.

Six hundred and ninety new telephone exchanges were opened during the year bringing the total number of departmental telephone exchanges in India to 9,978.

Twenty six thousand one hundred Trunk Automatic Exchange (TAX) lines were commissioned during the year by opening four new electronic trunk automatic exchanges at Bombay, Calcutta, Delhi and Madras together with expansion of existing exchanges. As on 31st March, 1984, there were 28 trunk automatic exchanges in the country with equipped capacity of 80,620 lines. 32 additional stations were connected to the TAX network during the year bringing the total number of stations connected to the TAX network to 237.

11 more subscribed trunk dialling (STD) routes on point-to-point basis were added during the year bringing the total number of such routes to 201 at the end of March, 1984. Besides, 233 manual trunk switching boards

were installed and 2,380 trunk circuits were added to work on the manual trunk board for handling the trunk traffic. A total of about 2 lakh lines of digital electronic switching equipment is likely to be commissioned in the coming years.

International Service. Direct telephone service is available with 46 countries on 954 channels. International Subscriber Dialled Service (ISD) is available to many countries and is being progressively expanded to more cities within the country.

Direct International Telex Service is operated to 45 countries on 1044 channels. International Subscriber dialled Telex Service (IXSD) is available to 175 countries.

Telephones

Circles/Districts	Total Telephones connected to Dep. net work
Circles	
Andhra Pradesh	1,39,342
Bihar	59,175
Gujarat	1,36,192
Jammu & Kashmir	25,256
Karnataka	1,14,530
Kerala	1,00,138
Madhya Pradesh	84,814
Maharashtra	1,49,323
North Eastern	40,758
North Western	1,22,720
Orissa	40,232
Rajasthan	73,541
Tamil Nadu	1,50,415
Uttar Pradesh	1,08,653
West Bengal	50,898
Total for Circles	13,95,987
Districts	
Agra	13,612
Ahmedabad	86,112
Allahabad	10,309
Amritsar	17,392
Bangalore	93,460
Bombay	5,52,953
Calcutta	2,75,868
Calicut	12,859
Chandigarh	23,056
Coimbatore	18,010
Delhi	3,55,236
Ernakulam	23,876
Gauhati	10,719
Hyderabad	68,516
Indore	19,424
Jaipur	36,40
Jullundur	14,029
Kanpur	26,94
Lucknow	29,10
Ludhiana	20,92
Madras	1,37,018
Madurai	14,78
Nagpur	22,16
Patna	16,48
Pune	60,62
Rajkot	13,45
Surat	23,904
Trivandrum	21,979
Varanasi	11,59
Vijayawada	13,38
Vadodra	21,46
Total for Dists.	20,65,669
Grand Total	34,61,65

Rural Communication. To improve the telecommuniction facilities in rural backward, hilly desert areas the P&T Department has embarked upon the scheme t provide Digital Equipment in the secondar areas throughout the country.

To start with, 20 secondary areas wer selected for the introduction of integrate Digital Network (IDN) which envisages provision of Electronic Terminal Exchanges connected through one or more trans Switches and Pulse Code Modulation Systems on Radio or Cable.

The IDN scheme will make a start in the first year of the 7th Plan.

Pin Code. As from August 15, 197 which marked the Silver Jubilee of independence the postal department introduce a new system, the *Postal Index Number* (PIN code to facilitate the despatch and deliver of mail. Under this system numbers replac names of post offices in addresses. For th present, however, names are also retaine along with numbers, so that the public ma be saved unnecessary confusion.

The code is a six-digit number, where th first digit stands for a postal region or zone There are 8 postal regions in India. Th second and third digits stand for a sub-are

Speed Post—the Latest

- *SPS is the new favourite word with the nations communicators. It stands for Speed Post Service both within and outside the country. SPS was inaugurated in India on April 1, 1986. It offers a fast, secure and reliable guaranteed delivery of articles within 24 hours.*
- *In India, the service would operate between Delhi, Bombay, Calcutta, Madras, Ahmedabad, Bangalore, Cochin, Guwahati, Indore, Jaipur, Kanpur, Pune and Vadodara. Internationally, it would operate between India and Britain, the Federal Republic of Germany (FRG) Hong Kong, Japan and the U.S.*
- *Speed post service is similar to courier services. It is economical, reliable and secured with money back guarantee if items are not deliverd within the specified time.*
- *Minister R. N. Mirdha who inaugurated the service, said India was not the first country to start the service. It was in existence in 60 countries and was known by different names like data post, speed post, express mail, expedited mail service, etc.*
- *Under the service, any postal article that could be sent by registered post — letters, packets, parcels — can also be sent as speed post items. In addition to the normal charges, a speed post fee will be levied on the delivery of these articles.*
- *Post offices, strategically located in busy and commercially important areas in these cities, would book the items.*
- *The cut-off time for accepting the articles would be as late in the day as possible. Generally, items would be accepted up to 5 p.m. or 6 p.m. depending upon the destination and air schedules. Items booked on any day would be delivered the very next working day.*
- *The speed post items would be delivered by the special delivery staff in jeeps. Postman would also be employed for delivery in congested areas where vehicular traffic was difficult.*
- *The number of Post Offices in the country rose to 1,44,875 during 1984-85. There is an average of one post office for 5,132 (figures based on July, 1983 projected population by ESCAP) people and for an area of 21.86 sq. km.*
- *The Posts and Telegraphs provides deliveries to 4.03 crore addresses each working day. The mail is collected from over 5 lakh letter boxes as well as from post offices and large postal users.*
- *The total number of telegraph offices rose to 39,986 from 36,953.*
- *The Direct Exchange Lines of telephone connections in 1984 stood at 30.53 lakh. About 8 lakh applicants are waiting.*
- *26,100 lines were commissioned in Trunk Automatic Exchanges (TAX) during the year by opening 4 new Electronic Trunk Automatic Exchanges at Bombay, Delhi and Madras. 11 more STD routes on point-to-point basis were added during the year bringing the total number of such routes to 201 at the end of March, 1984.*
- *The country has 176 telex exchanges. Total telex capacity increased to 29,844 local lines and 9,500 transit lines. At the end of the year total telex connections stood at 22,527.*
- *Direct telephone service is available with 44 countries of which 42 countries are connected through satellite circuits. Subscribers at the metropolitan cities e.g. New Delhi, Bombay, Madras and Calcutta can dial subscribers in United Kingdom, Australia, Singapore, Hong Kong, France and Japan on fully automatic basis.*
- *Fully automatic service is available to Indian telex subscribers through Gatex Bombay, Delhi and Madras. They can establish their telex calls to 101 countries without any operator assistance.*
- *The Post Office Savings Bank maintained the position as the nation's largest savings bank with about 1,44,000 post offices and an aggregate investment of Rs. 13,524 crore as compared to 11,111 crores in 1982-83.*

in the region and the last three digits show the particular post office of delivery. Take for instance the PIN code for Kottayam-686 000. Here 6 stands for the region, that is, Kerala and Tamil Nadu States, of which Kottayam division is a part.

The 2nd and 3rd digits 86 stand for Kottayam sub area. All postal offices in Kottayam division will have the common prefix 686. This is followed by 3 digits whic indicate what the delivery post office i 686 000 does not indicate any post office bu 686 001 represents what was previousl known as Kottayam-1, that is the Kottayar Head Post Office. 686 002 will represent th delivery office previously known as Ko tayam 2, that is, the Collectorate Post Offic in Kottayam, and so on.

TV NETWORK GROWS

With a total of 181 relay transmitters at its command television in India has grown to become the most powerful medium in the country. The total T.V. sets are estimated to be 7 million.

Of the 181 transmitters as many as 155 relay transmitters are dependent on New Delhi for their programme.

On August 9, Bombay Doordarshen was linked to 20 more relay centres in the state via INSAT-1B satellite, making the beginning of the proposed three-tier television service in the country.

An outlay of Rs. 700 crores has been made for Doordarshan for its development and extention during the Seventh Plan. The Plan envisages provision of a primary service for each major state in the concerned regional language, originating at the respective state capital and telecast over all transmitters in the state.

A Central Production Unit (CPU) is being set up for Doordarshan at a cost of Rs. 30 crore. Doordarshan will have two studios in the Asiad Village Complex at Sirifort in New Delhi by December 1987.

Expansion. As part of its plan to extend the coverage of television to more and more parts of the country, the Centre will shortly begin the installation of very low power transmitters (VLPTs), in various remote locations.

The VLPTs are different from the 100 Watt low power transmitters (LPTs), installed around the country, in the first phase of the television expansion programme. They have a power output of ten watts only.

These transmitters, with a range of about 20 km, are ideal for relaying programmes to hilly areas, remote locations and isolated islands that are sparsely populated.

Doordarshan has placed orders for 40 VLPTs for the Seventh Five-year Plan perio with the Gujarat Communcations and Electronics Limited (GCEL).

The VLPTs are designed by India takin into account the various constraints faced in large country like ours. For instance, th VLPTs will derive power for transmissio from solar panels so as to function in remot areas where there is no assured supply c electricity.

An automatic device would switch on th transmitter when signals were received an switch it off when the signals stop.

This would enable the VLPTs to operat unattended in distant locations.

Besides, the VLPTs would have two transmitters with an automatic switching pan that would switch the second one on as soo as the first developed any fault.

The VLPTs has been full developed an efforts were being made to integrate the with the TVROs manufactured by the publi sector Electronics Corporation of India L mited (ECIL).

The schedule was advanced at the ins ance of the Prime Minister, Mr. Rajiv Gand after his visit to Lakshadweep, where he sa the need and potential for such facilities

Of the 17 VLPTs to be delivered in the fir year, five would be set up in Lakshadwee The other locations are yet to be finalise

There was only 70 lakh VT sets in India b the end of 1986. Providing for 10 viewers each set, an estimated seven crore viewe T.V.

Large Revenue. However, th advertisement revenue has come as a win ll for Doordarshan. At Rs. 40,000 for 10 econds Doordarshan was expected to earn revenue of Rs. 85.0 crore in 1986-87. "With a light increase in tariff, it could come Rs. 100 rore. Something like Rs. 200 crore per year s very much within reach," said I & B inister, V.N. Gadgil on October 9, 1986.

Doordarhan earned Rs. 60.2 crore in 1985 rom commercial advertisements. It earned Rs. 31.43 crore in 1984-85, Rs. 19.7 crore in 983-84 and Rs. 15.9 crore in 1982-83.

The rate of advertisement on the national etwork for Super 'A' special programmes ike the "World Cup" was Rs. 45,000 for 10 econds and Rs. 1.5 lakhs for 30 minute sponsorship.

Doordarshan's revenue of Rs. 60.2 crore in 1985-86 form around 15 per cent of the dvertisement through the press media which comes around Rs. 450-500 crore per annum.

The largest advertisers are Hindustan Lever, Colgate-Palmolive and Hindustan Cocoa.

According to a statement by the I & B Minister in Loksabha on March 24, 1986, Hindustan Lever spent Rs. 133.3 lakhs in 1984-85 for advertisement on Doordarhan. This was Rs. 169.4 lakhs in 1983-84. The second position was bagged by Colgate Palmolive with an expenditure of Rs. 90.7 lakhs in 1984-85 (Rs. 87.2 lakhs in 1983-84), Hindustan Cocoa spent Rs. 63.3 lakh during 1984-85.

Morning TV Relay. Doordarshan proposes to telecast national hookup programmes from Delhi every morning. This will be relayed by all TV transmitters in the country.

The years 1985 and 1986 saw phenomenal growth in the quality and technical prowess of Doordarshan. In addition to providing live coverage of important national and international events, it gave live treatment to sports events like cricket tests, Seoul Asiad, etc. SAARC Summits at Dhaka and Bangalore were telecast live. 1986 also saw live telecast of transnational ecological survey on the occassion of the WWF jubilee through multisatellite network.

Television was introduced in the country in September, 1959 by setting up a centre at Delhi with the aid of UNESCO. In the initial years, transmission was limited to Delhi and adjoining rural areas and the rural viewers were provided with community viewing sets funded by the Ford Foundation. Over the last 25 years, Doordarshan has expanded both its network and the scope of its activities and has crystallised its main objectives.

Expansion. During its Silver Jubilee year, Doordashan carried out an expansion of its transmitter network which has perhaps no parallel in any developing country. At the beginning of the year, there were 45 transmitters in the network with 7 full-fledged Kendras, 3 smaller Kendras and 3 Production Centres. The network provided service to about 28 per cent of the population. In July, 1983, Government approved a Special Plan for TV Expansion at an outlay of Rs. 68 crore.

The Plan envisaged establishment of high power (10 KW) transmitters (HTPs) and low power (100 Watt) transmitter (LPTs) in various parts of the country, including some important project areas, so as to raise the total number of transmitters in the network to 180 by the end of the Sixth Plan. With the implementation of this Plan, Doordarshan added an unprecedented number of 126 transmitters to its network during the year.

Beginning July 1, 1984 one transmitter was commissioned every day for a period of about four months. All equipment required for the Special Plan was manufactured indigenously by public sector undertakings, viz., Bharat Electronics Ltd, Electronics Corporation of India Ltd, Gujarat Communications and Electronics Ltd and Triveni Structurals Ltd.

Many equipments were developed for the first time in the country. At present all the transmitters set up under the Special Plan, relay programmes from Doordarshan Kendra, Delhi via INSAT-IB. Among the Sixth Plan schemes approved earlier, interim programme production facilities were commissioned at Trivandrum.

Transmitters at Murshidabad, Asansol and Guwahati were commissioned on full power while interim service on reduced power was made available at Ahmedabad, Trivandrum, Kasauli, Varanasi, Kodaikanal, Panaji and Vijayawada. Doordarshan now has 172 transmitters in the network, providing TV service to 52 per cent of the population.

Second Channel. The year also marked the beginning of multi-channel TV service in the country. On September 17, 1984, the then Prime Minister, Smt. Indira Gandhi inaugurated the second TV channel of Doordarshan Kendra, Delhi. At present, programmes of interest to the viewers of the metropolis are put out on this channel for two hours every evening. Proposals for commissioning similar second channel TV service at Bombay, Madras and Calcutta are under consideration of the Government.

With the phenomenal expansion of the network as well as increase in transmission hours, the need for augmentation of software generation capacity has increased. In view of this, steps were taken to provide additional electronics news gathering equipment (ENG) to all Kendras to facilitate production of field-based programmes, includling wider coverage of news-worthy events.

The basic thrust of Doordarshan's Seventh Plan proposals is to provide a three-tier TV service comprising (i) primary service in each major state to be availbale throughout the State in the language of the state, (ii) national service to be available throughout the country based on programmes produced at Delhi as well as programmes of national relevance originating from other centres and (iii) local service for a limited duration from the primary service transmitters with provision for separate channels at the metropolitan centres.

The Seventh Plan proposals, *inter alia*, also envisage wider availability of facilities for local programme production in each state/Union Territory as well as more intensive TV coverage of the border areas.

INSAT Utilisation. Following the success of the SITE (Satellite Institutional Television Experiment) 1975-76, Government approved a proposal for multipurpose Indian National Satellite (INSAT). One of the objectives of the INSAT System was to provide nationwide direct TV broadcasting to rural communities in the fields of education, social awareness, health and family welfare, rural development, etc. The other objective was to use INSAT for relay of television program-
mes (National Networking) by a large nur
ber of terrestrial transmitters which do n
have any facilities for production of pro
rammes.

Under the INSAT schemes a cluster
three districts each in Andhra Prades
Bihar, Gujarat, Orissa, Maharashtra and Utt
Pradesh were proposed to be provided, b
rotation, area specified programme of
minutes in the evening and education
programmes of 45 minutes duration durin
the forenoon.

Besides the 20 LPTs that were brought
before the Asian Games in 1982, the LP
and HPTs that have been or are being set
under the Special Plan for TV Expansi
would relay television programmes throug
INSAT.

Radio. Radio will cover 97.5 per cent
the total population and 91 per cent of t
total area in the country with 203 broadcas
ing stations by the end of the Seventh Pla

There are an estimated 50 million rad
receivers in India, the growth being large
due to the abolition of licences on two-wa
band receivers a couple of years ago.

The budgetary allocation for All In
Radio has gone up from Rs. 4 crores in t
first plan to Rs. 700 crores in the Seven
Plan.

The transmitters include 150 mw transm
ters with a total power of 10,806 kw,
short-wave transmitters with total power
7,293 kw, 104 FM (frequency modulatio
transmitter with total power of 3,270 kw.
the air stations were provided with f
channel receive terminals during 1985-8

The expansion of local radio stations w
be the main thrust of the Seventh Plan a
over 70 local radio stations are planned to
commissioned.

The next focus of Indian broadcasting
going to be on F.M. broadcasting, and t
use of direct broadcasting by satellite.

AIR broadcasting programmes over
mediums wave, and three FM transmitte
About 38 per cent of the total broadcast n
constitutes music programmes, 11 per cen
this being folk music.

AIR celebrated its golden jubilee with
recital by Vocalist Pandit Bhimsen Joshi

Milestones in Communication

35,000	B.C. Cro-Magnon period; speculation that language existed.
22,000	B.C. Pre-historic cave paintings
4,000	B.C. Sumerian writing on Clay Tablets
3,000	B.C. Early Egyptian hieroglyphics
2,000	B.C. Mohanjo Daro and Harappan script and seals
1,800	B.C. Phoenician alphabet
1,000	B.C. Early Greek Script
600	B.C. Earliest Latin inscriptions
450	B.C. Carrier Pegions used by the Greeks
130	B.C. Library of Alexandria built
350	A.D. Books replace scrolls
600	A.D. Book printing in China
676	A.D. Paper and ink used by Arabs and Persians
1,200	A.D. Paper and ink art in Europe
1,453	A.D. Gutenberg Bible printed
1,562	A.D. First monthly newspaper in Italy
1,594	A.D. First magazine in Germany
1,639	A.D. First printing machine in North America
1,642	A.D. Early adding machine developed by Blaise Pascal
1,709	A.D. Copy-right law in England
1,791	A.D. First Amendment to the US Constitution
1,819	A.D. Flat-bed press invented by David Napier
1,827	A.D. Photographs on metal plates
1830	A.D. "Analytic Engine" (Computer) principles; Charles Babbage
1,835	A.D. Samuel Morse introduced the Telegraph
1,846	A.D. Sightening Press; high speed printing
1,855	A.D. Printing telegraphs, David Hughes
1,866	A.D. Translantic cable completed
1,876	A.D. Telephone invented; Alexander Graham Bell
1,888	A.D. Radio waves identified
1,895	A.D. Radio telegraphy; Guglielmo Marconi
1,895	A.D. Motion picture camera; Auguste and Louis Lumiere
1,900	A.D. Speech transmitted via radio waves
1,912	A.D. Motion picture a big business
1,920	A.D. Home television speculated upon
1,927	A.D. American Telephone and Telegraph Company demonstrates T.V.
1,936	A.D. Life magazine founded
1,942	A.D. First Electronic computer in US
1,946	A.D. Xerography invented; Chester Carlson
1,947	A.D. Transister invented; Bell Laboratories
1,949	A.D. First stored program computer
1,951	A.D. Colour TV introduced in US
1,957	A.D. Russia launches the first satellite, Sputnik
1,958	A.D. Stereophonic recordings in U.S.
1,961	A.D. Push button telephones introduced
1,962	A.D. Telestar satellite introduced
1,968	A.D. Portable video recorders introduced
1,970	A.D. Micro electronic chips coming into wide use
1,975	A.D. Flat wall TV screen invented
1,975	A.D. Fiber optic signal transmission now highly developed
1,975	A.D. First wide marketing of TV computer games
1,978	A.D. Video disc system test marketed
1,979	A.D. 3-D TV demonstrated
1,980	A.D. Home computer available for less than $500
1,980	A.D. New breakthrough in space photography
1,981	A.D. Space shuttle 'Columbia' has successful mission
1,982	A.D. European consortium launches multiple satellites
1,982	A.D. Major advances in implementation of mobile telephone
1,982	A.D. India too launches TV network on a wide scale — with colour TV as well
1,986	A.D. Live transnational television beaming through multi-satellite network.

the AIR auditorium in south Bombay.

The first radio station in India was established in Bombay in 1927 by a private company, which the government took over in 1930.

AIR is expected to earn Rs. 19.25 crore in 1986-87 as against Rs. 19.14 crore in the previous year through commercial advertisement.

News Services. The News Wing of the All India Radio broadcasts every day 256 bulletins for a duration of over 35 hours in its Home, External and Regional services. In the Home Service from Delhi, 68 national bulletins were put out in 19 languages for a duration of 10 hours and 8 minutes daily.

In the regional service, 124 bulletins, including three from Delhi, were broadcast daily in about 60 languages and dialects for a duration of 16 hours and 11 minutes. In the external services, 64 bulletins in 24 languages were put out every day from Delhi, Calcutta, Bombay and Madras for a duration of about nine hours. A regular ten-minute bulletin in Hindi from 23:45 hours to 23:55 hours followed by a five-minute commentary was introduced in a Gulf Service of All India Radio from 28 May 1984. A five-minute bulletin in Punjabi was introduced from Chandigarh from 15 August 1984.

External Service. All India Radio's external service broadcasts daily programmes for 57 hours and 15 minutes in 25 languages for listeners in different parts of the world. The target areas to which the external broadcasts are addressed include West, North, East and South East Asia; North West and East Africa; Australia and New Zealand; Europe and the United Kingdom and the Indian subcontinent and extend in all to 54 countries.

Services in 16 foreign languages and a General Overseas Service (GOS) in English seek to strengthen ties of friendship and forge cultural links with the peoples of the countries to whom these broadcasts are directed.

The foreign language broadcasts comprise 28 transmissions for about 30 hours a day. All are daily services of varying duration. Arabic programmes account for two and a half hours, Chinese (both Kouyu and Cantonese) and Pushtu two hours each,

BBC TV is 50

BBC TV is fifty. British Broadcasting Corporation, the most celebrated British institution, began beaming television programmes to the first 400 black-and-white set owners on November 2, 1936. Its first year schedule included a live drama by George Bernard Shaw that he personally, supervised.

George Orwell is said to have modelled his Ministry of Truth propaganda mill of his novel '1984' on his impressions as a worker in the BBC's External Service radio broadcasts. The novel itself was televised by the BBC in December 1954. Perhaps the single most important programme of the half century was the live telecast of Queen Elizabeth's coronation in 1953 to more than 20 million viewers, the first time a TV audience exceeded a radio audience.

Highlights range from the first televised Olympic Games in 1948 to the grand Jacob Bronowski science travels and to such landmark TV humour as "That was the Week That Was".

BBC now broadcasts 6,000 programmes a year, from art to schlock, with nature shows and dramatic production remaining among its strongest suits.

BBC's main income is $80 (Rs. 1000) per set annual licence fee that amounts to $1.1 billion a year. The present Director-General is Alasdair Miline who oversees 26 executives who help him to run the raj that includes two TV and four radio networks, plus regional TV operations, local radio and global broadcasting in most languages.

Nepali one hour and 40 minutes, Persian one hour forty-five minutes, Swahili, Indonesian, Russian, and French for one hour each. The General Overseas Service in English is for nine hours and thirty minutes and it is put out on the air in four transmissions directed to different parts of the world.

Overseas broadcasts in eight Indian languages are radiated in 17 transmissions a day for a total duration of about 27 hours and 15 minutes.

The services in Hindi, Tamil, Gujarati and Konkani are directed to Indians overseas while those in Urdu, Bengali, Punjabi and Sindhi are meant for listeners in the Indian subcontinent and countries on India's borders.

A new Gulf Service in Hindi for Indian workers and settlers in West Asia was started on 28 May 1984.

Educational. Seventy-one AIR stations put out educational programmes in 16 languages. The emphasis was on primary and informative education to support the universalisation of primary education and national educational projects.

All India Radio is now broadcasting about 50 per cent of the formal educational programmes to primary schools. These are enrichment programmes not closely related to the syllabus. However, broadcasts for secondary schools are closely related to the syllabus prescribed by the respective States.

There is also a weekly programme service for teachers. These programmes are planned in consultation with teachers and educational authorities. Broadcasts also include items related to freedom struggle and national integration. Radio support to correspondence courses of Delhi, Madurai, Punjab and Punjabi universities and the Open University, Hyderabad, is being provided from the stations in the respective zones.

Besides the daily programme of 'Jai Mala' in Vividh Bharati, some of the AIR stations provided separate programmes for the armed forces.

Sports events were covered by All India Radio both in the national hook-up and from the regional stations through running commentaries, resumes, radio reports, sports magazines, talks and interviews, etc.

Commercial Services. The Vividh Bharati service provided light entertainment to the listeners. Sixty per cent of the time was devoted to film music and the rest was covered by devotional, light music and spoken word programmes in the form of short plays, interviews, etc. Two high power short-wave transmitters at Madras and Bombay carried the transmissions.

FILM: WORLD'S NUMBER ONE

In spite of video and television threats, the Indian film industry performed a phenomenal feat by producing 912 feature films in 1985 as against 833 in 1984, thus notching a world record in film production.

A total of 892 films were produced in colour and 30 in black and white in different languages. In all 128 foreign films were imported, including those under the NRI (Non Resident Indian) Scheme, in 1985.

Numbers Up. The production of films shot up in Telugu, Tamil, Hindi, Malayalam, Hariyanvi, Assamese, Bhojpuri, Nepali, Marathi, Oriya, Rajasthani and Urdu. There was a fall in the production of Kannada, Bengali, Gujarati and Punjabi films.

New language films were added — one each in Maithili, Nimadi and Dimasa. One film each was produced in English and Konkani.

Telugu films topped the list with (1984 figures in brackets) 198 (170), Hindi 187 (165), Malayalam 137 (121), Oriya 17 (14), Marathi 16 (10), Hariyanvi 10 (4), Assamese 10 (5), Bhojpuri 6 (1), Nepali 4 (1), Rajasthani 3 (2) and Urdu 2 (1).

The fall in the production was in Kannada 60 (81), Bengali 28 (35), Gujarati 22 (30), and Punjabi 8 (10).

Exports. Direct exports by the National Film Development Corporation (NFDC) reached a record of 1.15 crore in 1985-86.

Exports had steadily increased from Rs. 41 lakh in 1980-81 and Rs. 54 lakh in 1981-82 to Rs. 1 crore in 1982-83.

Despite the declining trend in the overall export of Indian films, exports to Iraq, Egypt, the Soviet Union, Ghana and other nations had shown a noticeable uptrend last year due to the NFDC's exports.

Among the important export deals was the sale of "Ghare Baire", directed by Satyajit Ray.

The NFDC recently signed a special agreement for the supply of Telugu, Tamil, Marathi and other regional films to Mauritius.

During the last six years, the NFDC had exported films to more than 60 countries.

Under the compulsory exhibition scheme, over 12,000 public cinema halls in India screen Films Division's documentary films or news Magazines at every show. It is est mated that about seven crore people se them in a week. Selected films are als shown in rural areas by the Directorate c Field Publicity. Some films are supplied t Indian missions abroad. The films are als utilised by the Doordarshan Kendras fo telecasting. The Division releases ove 38,000 prints of its documentary films an news magazines for theatrical exhibition an about 15,000 prints for non-commercial exhibition in India every year. Th documentaries and newsreels produced b State Government film units are also release through the distribution network of the Film Division.

Indian Cinema's Strides

First indigenous short: Save Dada's "The Wrestlers", 1899.

First totally indigenous story film: Dada Saheb Phalke's "Raja Harishchandra", 1913.

First talkie: Ardesher Irani's "Alam Ara", 1931.

First successful indigenous colour film: Ardesher Irani's "Kisan Kanya", 1937.

Dawn of colour era: With Mehboob's "Aan", 1952.

First Cinemascope film: Guru Dutt's "Kaagaz ke Phool" (B & W, 1959), lensed by C. V. K. Murthy.

First 70 mm film: Pachchhi's "Around The World", 1967.

First Panavision film: Krishna Shah's "Shalimar", 1978.

First Technovision film: Feroze Khan's "Qurbani", 1980.

First 35-mm film re-issued in 70-mm format: V. Shantaram's "Jhanak Jhanak Payal Baje" — 1955, re-issued in 1982.

First 3-D film: Jojo's "My Dear Kuttichathan" (Malayalam, 1984).

First technology breakthrough: Ardesheer Irani's colour process, patented in 1937.

First technology lead in the world: Dr. Chandrakant Marathe's "Mirror Screen Arrangement" (MSA) installed in Pune in 1971.

Film Certification. Films can be publicly exhibited in India only after they have been certified by the CBFC. The Board set up under the Cinematograph Act, 1952 consists of non-official members and a chairman. It has five regional offices at Bombay Calcutta, Madras, Bangalore and Trivandrum. One more office is to be set up a Hyderabad shortly. The regional offices are assisted in the examination of films by advisory panels which include eminent educationists, art critics, journalists, cine-artistes, socia workers, doctors and others.

The Bangalore and the Trivandrum regional offices were inaugurated on April 12 1984 and April 22, 1984 respectively. I March 1984 a Film Certification Appellate Tribunal was constituted, with headquarter at New Delhi, to hear appeals against the decisions of the Board of Film Certification

The requirement of re-certification of films after every 10 years was dispensed with i September 1984. The Cinematograph (Certification) Rules 1983 were amended o February 28, 1984 to provide for separate certification of video films by the CBFC fo their public exhibition. The Cinematograph Act, 1952 was also amended to enhance the penalties for contravention of the Act and also to prescribe minimum punishment fo exhibition of uncensored video films.

The production graph of feature films i the country shows continuous rise during the last 34 years since the inception of the CBFC (Central Board of Film Censors) in 1951. That year saw a total of 219 films. The number rose to 273 in 1954, 304 in 1964, 435 in 1974 and 833 in 1984.

The language-wise production pattern of feature films which was observed last year maintained its status quo during this year as well. Telugu dominated the 1984 scene with 170 films followed by Hindi (165). The third place was taken by Tamil (148) and the fourth by Malayalam (121).

All Colour. Colour predominates in the production of feature films in India. In 1985, out of a total of 912 films, 892 films were in colour (98 per cent). Social themes continued to dominate the Indian film scene in 1985 followed by crime themes.

The proportion of Indian feature films certified for public exhibition restricted to adults only is going up. In 1976 out of a total of 507 films certified, 27 were given 'A' certificates (5.32 per cent). As against this in 1984 out of 833 films, 301 were given 'A' certificates (36.13 per cent).

The Board granted 710 'U' certificates, 4 'UA' certificates, 14 'A' certificates and 25 'S' certificates in respect of foreign short films and 23 'U' certificates, 7 'UA' certificates and 27 'A' certificates in respect of foreign feature films in 1984. The Board also granted 1562 'U' certificates, 1 'UA' certificate, 67 'UA' certificates and 301 'A' certificates in respect of Indian feature films in 1984. Indian video feature films certified during the year numbered 41.

A total length of 22,961.84 metres was excised from films before their certification in 1984. The Board classified 648 films as predominantly educational in 1984.

N F D C. The National Film Development Corporation (NFDC) was set up in 1975 as a Central agency to promote good cinema in the country. The primary aim of the Corporation is to plan for, promote and organise the integrated development of the film industry in India.

A total of 389 regional films produced in the country were exported through the Santacruz Electroncis Export Processing Zone during 1985, earning Rs. 173.62 lakhs as foreign exchange. Languagewise, Tamil came first with 189 films followed by Malayalam (100), Telugu (44) and Bengali (28). Other regional films exported were Gujarati (3), Marathi (6), Punjabi (14) and Kannada, Konkani, Assamese, Sinhalese and Sindhi (1 each).

National Archive. NFAI (National Film Archive of India) with headquarters at Pune is a pioneer institution set up in 1964 with the objectives of acquisition and preservation on National Cinema, film classification, documentation and research encouraging film technology and spread of film culture in the country.

The most important acquisition of the year has been a set of film records of famous Hindustani classical singers, singing before the camera. These rare on-real shorts were made by veteran film maker J.B.H. Wadia between 1937 and 1947 in the "Variety Entertainment short series" programmes of his Wadia Movieton.

The classical singers filmed in the series include: Ahmed Dilawar, Fida Husain Jalandhary, Firoze Dastur, Kumar Gandharva, Malika Pukhraj, Miss Sarita Devi, Sardar Mansoor and Zohrabai Ambala-Wali.

A new regional office of the Archive has started functioning at Trivandrum, Calcutta and Bangalore regional offices set up earlier provided useful service to film societies, film study groups and film lovers in the respective region.

Film and TV Institute. The Film Institute of India was established in 1960 with the object of imparting technical training in a systematic manner in the art and craft of film-making. With the extension of its sphere of activities to provide in-service training in Television to officers and staff of Doordarshan, the Institute was renamed as the Film and Television Institute of India. On October 1, 1974, the Institute became a Society registered under the Registration of Societies Act of 1860.

The Film Wing offers courses leading to Diploma in cinema with specialization in areas (i) direction, (ii) cinematography, (iii) editing, and (iv) sound recording and sound engineering (SRSE). Thirty-nine students were admitted during the year for the first year integrated course leading to one of the specializations. The Second batch of Post-Diploma course in Film Direction was started from July, 1984. The total number of students on the rolls during the academic year is 139 including 22 from abroad.

The Institute and the National Film Archive of India jointly conducted the 10th Film Appreciation Course from 18th June to 21 July 1984. Seventy participants comprising teachers, journalists, writers, media officers, etc. attended the course.

Both these bodies have been re-constituted by appointing new members in April 1984. Shri Mrinal Sen is the President/ Chairman of the FTII Society/Governing Council.

Advent of Cinema. The cinema came to India as early as 1896. The first motion picture was shown in India on July 7, 1896 at Watson's Hotel, Bombay by the touring agents of the famous Lumiere Brothers of France. The show had a duration of less than an hour and consisted of items like 'the arrival of a train, the sea bath, workers leaving a factory and ladies and soldiers on wheels'. *The Jubilee Procession* in England in 1897 was the next important exhibition in India. It became a hit. Indian scenes captured by some foreign photographers were also shown now and then, with items like *Coconut Fair, Our Indian Empire* and a *Panorama of Indian Scenes*.

The first Indian to make a film was Harischandra Bhatvadekar, also known as Sava Dada. In 1899 he photographed and exhibited his own short items, *The Wrestlers* and *Man and Monkey*. By this time a change had come in film exhibitions in Europe instead of photographing actual scenes, imaginary scenes were staged by actors which were photographed into films. *The Death of Nelson* was one such. This opened a new line in film photography which was destined to revolutionise the film industry.

Feature Films. The first Indian story film *Pundalik* was made by R.G. Torney and N.C. Chitra and released at the Corporation Cinematograph, Bombay, on May 18, 1912. This film centred round a saint of the same name in Maharashtra. The next year, on May 3, 1913, Dada Phalke released the long film story *Raja Harischandra* at the same theatre. *Pundalik* was half-British in its make, it being photographed by an English cameraman Johnson. *Raja Harischandra* was cent per cent Indian. Dada Saheb did everything himself from the script down to the marketing of the film. For this reason, Dada Saheb Phalke has been rightly acclaimed as the *Father of the Indian Cinema*. Phalke laid down the basic norms of Indian films, in form and content, which have been largely followed ever since.

Phalke went on to produce two more films *Mohini Bhasmasur* and *Satyavan Savitry* both drawn from Hindu mythology. He took his 3 films to London, where they were exhibited. They won all round praise.

In September 1917, Phalke released his most ambitious film venture, *Lanka Dahanam*, again a mythological story. Exhibited in a double programme, with an English film called *The Blind Fate, Lanka Dahanam* (Burning of Lanka) proved to be a big box-office hit. This success conclusively dispelled all fears about the future of the film industry in India.

In March 1917, J.F. Madan of Calcutta produced *Satyavadi Raja Harischandra*, based on the same mythological story as Phalke's *Raja Harischandra*.

These three men, R.G. Torney, Dada Saheb Phalke of Bombay and J.F. Madan of Calcutta are the pioneers of the film industry in India. J.F. Madan was, in addition, the pioneer of cinema houses. In 1907, he built India's first cinema house in Calcutta. His company, the *Elphinstone Bioscope Company*, sponsored the gigantic chain of cinema houses in India, later known as Madan Theatres.

Madras entered the film industry with *Keechaka Vadhom*, a mythological story, in 1919. With the end of the First World War many sub-centres of Film production emerged—*Kolhapur*, *Nasik*, *Sangli* and *Poona*, around *Bombay*, *Vijayawada*, *Salem* and *Coimbatore*, around *Madras* and *Gauhati* and *Bhubaneswar* around *Calcutta*. By 1929, India was producing about 38 films a year. The production shot up to 270 in 1931, placing India among the three largest producers of feature films in the world.

Talkies. The talkies came to India with a bang and quickly displaced the movies. The first talkie in India *Alam Ara*, was made by Ardeshir Irani in 1931 at the Imperial Film Studio in Bombay. It was in Hindustani and was screened at Bombay on March 1, 1931.

Irani as the pioneer of talkie is to be counted along with R.G. Torney, Dada Saheb Phalke and J.F. Madan as one of the founders of the Indian cinema.

Alam Ara was quickly followed by other Indian talkies which totalled 28 in 1931. The talkies tolled the knell of the silent films or movies. From a record production of 270 in 1931, the silent films came down to a mere 7 in 1934 and faded out completely by 1936. In 1971 India gained for the first time the top place in world film production and has maintained the lead ever since.

Between May 18, 1912 when the first Indian feature film, *Pundalik* was exhibited and May 18, 1972 when the country celebrated the Golden Jubilee of the film industry, India had produced a total of 11385 films (including 1279 silent films) in 27 languages, five of them foreign—English, Arabic, Persian, Sinhala and Nepalese.

India continued to be the world's topmost producer of films when the talkie celebrated its Golden Jubilee in March 1981. In 1980, India had produced 742 films.

Newsreels. Weekly Indian News Review, cartoon films, quickies and documentaries required for public information or education are produced by the Films Division in the Ministry of Information and Broadcasting. The Division first set up in 1948 started from small beginnings with about 33 documentary films, 12 compilations and 52 newsreels in 1949-50. Currently, the Division produces on an average 100 short films (including cartoon films) and 52 national newsreels.

The screen is today India's most popular entertainment. The fast growth of cinema houses in the country attests to this. There were 7522 permanent and 4754 temporary touring cinema houses in the country as in April, 1984.

Languages. Films are produced in all important languages of India and even in some provincial dialects like Bhojpuri, Konkani and Badaga. Till 1979, Hindi with its variants accounted for the largest number of films. After 1979, Hindi lost ground to South Indian languages.

As a single language, Telugu dominates the 1982 scene with 154 films followed by Hindi 148. However, if Urdu films are also added, the number of Hindi/Urdu films during the year comes to 155. Tamil has taken the third place (141) and Malayalam the fourth (117).

GROWING PRINT MEDIA

India has a large number of newspapers, but in a country of 750 million people, their circulation never comes anywhere near the ones in developed countries. India has a total number of 21000 newspapers and periodicals, but their aggregate circulation is just around 50 million. However, the print media is growing qualitatively in spite of the onslaught of the electronic media.

The office of the Registrar of Newspapers in India was set up in July, 1956. As functions are two-fold, namely, statutory and non-statutory. The statutory functions include:

(1) maintenance of a register containing particulars of all newspapers published in India; (2) keeping District Magistrates informed of the availability of titles for newspapers; (3) issuance of Registration Certificates in respect of newspapers; (4) watching the regularity of newspapers; (5) scrutiny of annual statements sent by publishers of newspapers; (6)verification and checking of circulation claims of newspapers and (7) preparation of a report annually, containing information and statistics about the Press in India which is presented to Parliament every year.

The non-statutory functions are: (1) to work out and authorize newsprint entitlement to individual newspapers, according to the Newsprint Allocation Policy through the State Trading Corporation of India and also to advise the State Trading Corporation of India/Newsprint Advisory Committee regarding the quantum of Newsprint Import needed; (2) to examine and certify the essentiality of printing, composing and allied machinery required by newpapers/periodicals and communicate it to the Chief Controller of Imports and Exports for possible import.

Newspapers. With publications in 91 languages, India showed a growth in newspapers and periodicals of 4.1 per cent in 1983 over the previous year.

According to the report, "Press in India 1984", presented to the Lok Sabha on August 12, 1986, the circulation also showed a growth of 10.6 per cent.

The country had 19,937 newspapers with a circulation of 5,00,94,000 in 1982 and 20,758 newspapers with a circulation of 5,53,91,000 in 1983. As many as 607 new newspapers — including 69 dailies and 140 weeklies — came up in 1983.

The number of daily newspapers in 1983 increased to 1,423 from 1,334 in 1982, showing an increase of 6.7 per cent in 20 years from 1963 to 1983, the number of dailies increased by 182.9 per cent. Their circulation increased to 1,67,31,000 copies in 1983 or 12.7 per cent.

There were 192 big, 427 medium and 7,356 small newspapers by the end of 1983. Percentwise, their share of circulation came to 41.2, 20.9 and 37.9 respectively. The big newspapers included 71 dailies with 50.1 per cent of the dailies circulation. There were 165 medium and 651 small dailies with 26.8 per cent and 32.1 per cent of the circulation.

Largest Circulated. The ***Ananda Bazar Patrika***, a Bengali daily from Calcutta with a circulation of 4,02,491 copies, was the largest circulated single edition daily in 1983. The ***Jugantar***, another Bengali daily from Calcutta, with a circulation of 3,27,549 came second.

The ***Indian Express*** published from ten centres in English, claimed the first position among multi-edition dailies, with a circulation of 5,67,801. With three editions, the ***Times of India***, in English, came second with a total circulation of 5,30,565 copies. The third position went to the ***Malayala Manorama***, published from Kottayam, Cochin and Calicut with a combined circulation of 5,27,657.

Among the periodicals the ***Malayala Manorama Weekly***, in Malayalam came first with 6,48,524 copies. Next came the ***Kumudam***, Tamil weekly of Madras with a circulation 5,88,359 copies.

Hindi on Top. As in the previou years, the highest number of newspaper were published in Hindi (5,936), followed b English (3,840), Bengali (1,582), Urdu (1,37 and Marathi (1,131). In circulation too th Hindi newspapers maintained their lead wit 15,458,000 copies in 1983 followed by En glish with 10,627,000 copies and Malayalar with 4,918,000 copies.

As in 1982, the largest number of newspap ers were published from Uttar Prades (2,912). Maharashtra with 2,664 came nex followed by Delhi and West Bengal wit 2,637 and 2,274 respectively The press Delhi maintained its too position in circula tion with 8,176,000 copies in 1983 followe by Maharashtra (8,132,000) and Tamil Nad (6,552,000). Uttar Pradesh took the four place with 6,025,000 copies.

Delhi had the distinction of publishin newspapers in 15 of the 16 principal la guages. Tamil Nadu came next with new papers in 14 languages. Newspapers in mo than ten principal languages were publishe from Maharashtra (13), West Bengal (12 Andhra Pradesh (11) and Uttar Pradesh (1

As on December 31, 1984, the total numb of registered newspapers and journals on th live list of RNI (Registrar of Newspapers India) was 21,784.

The total number of newspapers bei published regularly and number of new papers ceased from 1980 to 1984 is give year-wise as under:-

Year	No. of newspapers on live register	No. of newspape ceased
1980	18140	339
1981	19144	66
1982	19937	164
1983	20784	97
1984	21784	213

LOK SABHA Q.A

The readership in India is 20 newspap copies for every 1,000 population though comes fourth in the world and second in A for the largest number of newspapers in country. Malaysia has a readership rate of

The Global Newspaper

Is there a global newspap- ? Yes, as the claims go. ernational Herald Tribune s grown to become a glob- newspaper with 8 printing es around the world

Edited and published in ris, it is being printed nultaneously in Paris, Lon- on, Zurich, Hong Kong, ngapore, The Hague arseille and Miami. The xt may be Bombay

The eighth print site was augurated in Miami, Flor- a on March 9, 1986. The T thus became the first wspaper in history to print e same edition simul- neously for distribution on continents

As the editors and com- sitors complete their work Paris each evening, an ectronic image of each ge is sent to each of the inting sites at a speed of out four minutes per page reach Miami, the signal is layed by a Intelesat V-A mmunications satellite 000 miles (37,300 kilo- eters) above the Atlantic cean to the earth station at e Miami plant. The printing done there on presses ned by the Spanish daily ario Los Americas

Founded in Paris 99 years o, the IHT has been owned ntly since 1967 by the New rk Times Co., The Washington Post Co. and Whitney Communications Co. Its daily paid circulation last year averaged 1,680,189 copies, in 164 countries.

- **'Pravda' in English.** An English language version of Pravda, the Soviet daily, went on sale in London, looking nothing like the Fleet Street newspapers Britons are accustomed to.

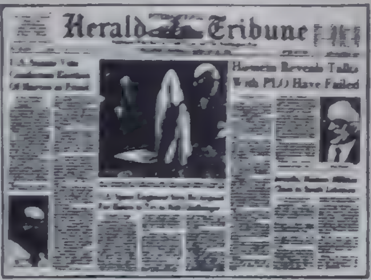
There were no advertisements, no screaming headlines, no mention of Princess Diana and no "page three girls" — the nude pin-ups that are a staple of the city's racier tabloid dailies.

Instead, readers who paid 50 pence for their copy received six densely packed pages of Soviet-style news and commentary, with four photographs and a cartoon showing Pentagon generals racing for bunkers to escape low-flying doves labeled "Soviet peace initiatives."

Readers in the USA and France have already made the acquaintance of 'Pravda' in their own language, and at the beginning of March last Italian readers also were offered the same opportunity. A copy of the "Pravda", translated into Italian, came out as a special supplement to the weekly "L'Europeo" in February, 1986.

- **Newsweek Japan,** the first foreign language edition of the Well-known U.S. weekly magazine, was launched in January, 1986.

The new magazine, with a projected first-year circulation of over one lakh, will be published by TBS-Britannica Co. Ltd of Japan, 51 per cent of which is owned by Suntory Ltd., a leading Japanese distiller and food processing company.



The English language edition of Newsweek International in Japan will continue with a circulation of 45,000, appearing every Tuesday. Newsweek Japan will be available two days later bringing Newsweek Pacific's total circulation to more than four-lakh copies.

- **Newspaper as Undercloth.** Liberation — the French daily which excels in providing fashionable gags — created a history of sorts in October last by bringing out a one-day cloth edition.

The 16-page number, which was completely printed on fine cloth, was sold at more than three times the normal price, the first time in recent French press history that a paper was sold in black.

- **Good News, Bad News.** The Good News newspaper, which prints only items calculated to put a smile on the faces of its readers, published in its first bad news — it's closing down.

Good News, a monthly publication distributed free in the Midlands town of Heanor, London, said rising printing costs had forced it out of business.

copies per 1,000 population and Sri Lanka 49 copies.

According to the Indian and Eastern Newspapers Society (IENS) the low readership rate in the country is not attributable to the literacy rate, which has gone up from 15.67 per cent to 31.17 per cent under the 1981 census. Instead, it is mainly due to the Government constraints, including the high cost of indigenous newsprint a high customs duty of Rs. 550 a tonne on imported newsprint and upto 195 per cent on spare parts and consumables, and lack of finance from financial institutions as newspapers are not considers an "Industry"

First Newspaper. The first newspaper in India on modern lines appeared in Calcutta on the 27th January, 1780. This was the ***Bengal Gazette,*** published in English by an Englishman, J.A. Hickey. Hickey's Gazette as it was popularly called, was a political and commercial weekly "open to all parties but influenced by none". However, it displeased the officers of the day and had to down shutters within an year. Messink and Reed who started the ***India Gazette*** also in 1780 played it safe, towing the official line. The ***Calcutta Gazette*** appeared in 1874. Other journals followed—the ***Calcutta Chronicle,*** The ***Madras Courier*** (1875), the ***Bombay Herald*** (1879) and others. Though all these papers took care not to offend the government, none of them could survive long. All these periodicals were run by Englishmen in English for the Englishmen in India.

During the Second World War, when the British administrators wanted the cooperation of the Indian people, a gentleman's agreement was concluded between the Government and the Press, which resulted in the Press Advisory Committee at the Centre and in most of the States. This gave the press a consultative status.

When India became free, there was no longer any antagonism between the Government and the people and the Press was free to play an entirely new role. In March 1947, the Government appointed a Press Laws Enquiry Committee, as a result of which, the obnoxious provisions of the Press Acts until then in force were removed and a policy of consultative co-operation between the Government and press was inaugurated.

After the proclamation of Emergency on June 25, 1975 three ordinances were issue (i) abolishing the Press Council (ii) repealin the Parliamentary (Protection of Publicatio Act and (iii) promulgating a new law—T Prevention of Publication (Objectionab Matter) Act (POMA). The press was th reduced to the position of an orderly of t government.

The Janata government which rode

'Manorama' Still at Top

According to ABC (Audit Bureau of Circulation) report for January-June 1986, ***Malayala Manorama,*** *published from 3 centres continues to be the larges selling newspaper in India. Malayala Manorama commanded a circulation of 5,98,139 copies.*

Second comes ***Indian Express*** *published from 11 centres with a circulation of 5,94,950 copies.*

'Times of India' *publised from 3 centres comes 3rd with a circulation of 5,58,691 copies.*

There are 3 newspaers having a circulation over 5 lakh, 4 between 3 and 4 lakh, 2 between 2 and 3 lakh and 19 between 1 and 2 lakh.

'Anand Bazar Patrika', *Bengali daily, continues to be the largest circulated Single Edition Daily with a circulation of 4,07,508 copies followed by* ***'Juganthar',*** *another Bengali Daily, with 3,01,759 copies.*

Language-wise English Papers led the Indian language dailies—21 English dailies having a circulation of 27,06,176 copies. This is followed by Hindi dailies—32 in number with 26,19,385 copies. Malayalam took the 3rd place with 13,03,395 copies.

Other Toppers: *Weekly:* ***'Kumudam',*** *published from Madras—6,07,517 copies.*

Fortnighly: ***India Toady,*** *published from Delhi—3,17,627 copies.*

Monthly: ***Manohar Kahaniyan,*** *published from Allahabad—3,69,863 copies.*

ower on the 1977 March elections promptly epealed the POMA, restored the Parliamen- ry Proceedings (Protection of Publication) ct and took steps to re-constitute the Press ouncil.

The Press Information Bureau (PIB) is the nain channel of communication between the overnment and the media; the information ut out by the Bureau goes to dailies as well s news periodicals, news agencies and adio and television organisations, both Indi- n and foreign. With its countrywide tele- rinter network and airbag facilites, informa- on put out by PIB goes to newspapers not nly in Delhi but also in other parts of the ountry. While less than a thousand news- apers subscribed to the wire agencies, PIB istributed its press material to 6,897 news- apers in 1983-84.

The Second Press Commision, set up in 978, under the Commission of Inquiry Act, 952, to enquire into the growth and status of ne Indian Press, submitted its report to the overnment on 3 April 1982. The commission vas headed by Justice K.K. Mathew. The eport contains 278 recommendations cover- ng diverse aspects of the Press. Suggestions n respect of various recommendations are nder the consideration of a Committee of inisters.

ress Council formed under an Act of 978 the Press Council safeguards freedom f Press, maintains and improves the stan- lard of newspapers and news agencies. It is omprised mainly of representatives from he newspapers who are charged with the esponsibility of regulating the conduct of heir brethren in the same sphere. Thus, the Council has come to assume the role of a elf-regulating body of the newspapermen hemselves.

Chairman: Justice A. N. Sen.

ews Agencies: India has four news gencies—Press Trust of India (PTI), United ews of India (UNI), Samachar Bharati and lindustan Samachar. The four news agen- ies were merged in 1976 to form *Samachar*. *amachar* was dismantled two years later nd the four new agencies resumed their ndependent operations from 14 April 1978.

ress Trust of India Ltd. (PTI). Dr. D.N Rd, ombay-1; Estd. 1949. Largest Asian News gency. It took over the business of the ssociated Press of India. Subscribes to and exchanges news with major world news agencies and agencies in the developing countries. News H.Q. PTI Bld, 4, Parliament St., New Delhi.

Chairman: Ramnath Goenka. *General Manager:* P. Unnikrishnan.

United News of India (UNI), 9, Rafi Marg, New Delhi-1; Estd. March 1961, provides national and international news service. UNI-VARTA (wire service in Hindi), Financial News Service, Banking News Service. It issues weekly background service (Eng & Hindi), Weekly Agriculture Service (Eng & Guj). Daily feature service, Economic Service (four times a week) and Energy News Service (Twice a week). Weekly News Service to UAE, Qatar, Bahrain and Kuwait through exclusive satellite channel.

Chairman: K. K. Pai.

Ch. Ed & GM: U. R. Kalkur.

Samachar Bharati, 13, Ferozshah Rd, New Delhi-1; Estd Oct. 2, 1966. Feeding nearly 200 newspapers in twelve Indian languages. Countrywide network of Devanagari teleprinters. Full fledged sports and commercial wings.

General Manager: Ghanshyam Pankaj.

Hindustan Samachar, 2, Connaught Lane, New Delhi-1; Estd Feb. 1948. Service in Hindi, Marathi, Nepali and Gujarati on Nagri teleprinters and summary service in other Indian languages.

General Manager: U.S. Gandhi.

Professional Associations. There are about 25 Professional and Trade Associations in the print media. Among them are:

Indian and Eastern Newspaper Society (IENS), IENS Bldgs, Rafi Marg, New Delhi-1. Founded in 1938. It is a body of Newspapers and periodicals. Aims: to promote and safeguard members' business interests incidental to producing their publications. Accreditation to advertising agencies given which fulfil certain conditions. Publishes annual Handbook, Total membership: 462, Accredited advertising agencies: 301.

President: R. M. Cama, *Secretary:* S.C. Rao.

Audit Bureau of Circulations Ltd. (ABC), Wakefield House, Ballard Estate, Bombay. The ABC was incorporated in 1948 as a nonprofit making company with no share capital and liability limited by guarantee. Its affairs are controlled by a Council of Management, half of which retires by rotation and is elected at the Annual General Meeting each year. Equal representation is given on the Council to nominees of publishers on one hand and advertisers and advertising agencies on the other. The Chairman is elected alternatively from each group. The Bureau's object is to certify the Net Paid Circulation of Newspapers and Periodicals.

Chairman: R. Lakshmipathy. ***Hon. Secy:*** P. R. Krishnamoorthy.

Indian Languages Newspapers' Association (ILNA), Janmabhoomi Bhavan, Ghoga St,. Fort, Bombay-1. Founded 1941. Any newspaper or periodical published in any of the Indian languages or an organisation or society of newspapers is eligible for membership. Publishes "Language Press Bulletin" in English.

President: K. L. Deshpande; *Hon. Gen. Secys:* Kiran R. Sheth, L. P. Kunte, Swami Renapurkar

All India Newspaper Editors' Conference (AINEC) 36-37, Northend Complex, Ramakrishna Ashram Marg, New Delhi-1. Organization of newspapers and periodicals as represented by their editors, concerned chiefly with interest of editorial section of the newspaper industry, founded 1940.

Membership: Any newspaper or periodical published in India qualifies. Present membership: 325.

President: Vishwa Bandhu Gupta, *Sec. Gen:* M.S. Madhusoodanan.

Editors Guild of India, Delhi Press Bldg., Jhandewala Estate, Rani Jhansi Marg, New Delhi-110 055. Organization formed in 1978 to "uphold freedom of the press, strive for improvement of professional standards, safeguard editorial independence", etc. Present membership: 65.

President: B.G. Verghese, General Secretary: Viswanath.

Indian Federation of Working Journalist (IFWJ), Flat No. 29, Shankar Market, Connaught Circus, New Delhi-1. A Federal al India body representing journalists' trad union. Recognised by Government as th representative organization of the workin journalists, on Wage Board.

President: Vikram Rao, *Secy. Gen:* K.M Roy.

National Union of Journalists (India) Jantar Mantar Rd, New Delhi-1. Founded i 1972. A federation of Working Journalist Unions with affiliated units in all States.

President: Prithvis Chakravarti, *Sec Gen.:* N.K. Trikha.

Press Institute of India, Sapru Hous Annexe, Barakhamba Rd., New Delhi-1. Professional body of Indian Newspapers an Journals, set up in 1963. Holds professiona workshops and seminars for editorial an managerial personnel at all levels; place consultants from home and abroad to wor with Indian newspapers, and organise selection of Indian journalists for variou foreign scholarships. Publishes books rela ing to mass media, a bi-monthly journa *Vidura*, and *Data India*, a weekly. Edits an produces a feature news service, Depthnew India. Newspapers, periodicals and hous journals qualify for membership which corporate.

Chairman: G. Kasturi, *Director:* S. Prakasha Rao.

Research Institute for Newspaper Develo ment, 38, Pantheon Rd, Madras-8. Conduc research and training in newspaper produc tion and management, provides informatio and consultation to newspaper managemen Publishes monthly bulletin: *RIND Survey*

Chairman: K. M. Mathew, *Director:* K. Ramakrishnan.

REACHING OUT TO SPACE

India's space programme has come of age. With the launching of her own satellites in her own vehicles and deploying her own communication satellites to geostationary orbit, India has earned a coveted place in the exclusive space club. Indians are joining the selected band of space-travellers also.

The Indian Space programme is directed towards harnessing space technology in a self-reliant manner for:- (1). Satellite communications including direct TV broadcas ing to community receivers. (2). Natur resources survey & management includi

What Is ASLV?

What is ASLV? What is its significance?

The successful launch of the 23.5 metre, 39- tonne Augmented satellite Launch Vehicle will be a milestone in India's advancement towards self-reliance in space technology.

ASLV, India's second generation satellite launch vehicle, is an augmented version of the concluded series of SLV-3 which shot up from Sriharikota and placed in orbit 40 to 50 kg. Rohini satellites. The ASlV rocket has five stages, with two booster rockets strapped on to the base of the vehicle. The booster motors mark the first stage of the vehicle and they have a thrust equivalent to the SLV-3 rockets first stage.

The importance of ASlV is that it is the forrunner of a number of very important space feats that India is caping for.

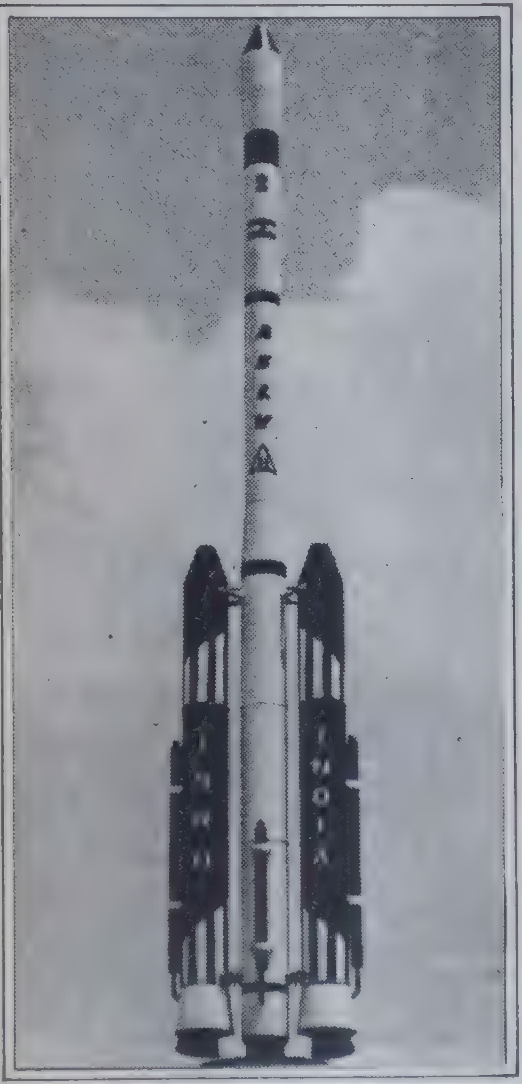
ASLV incorporated a number of new and advanced technologies vital for India,s future launch vehicles like the Polar Satellite lauch Vehicle and Geostationary Satellite Launch Vehicle.

The ASLV, designed to put a 150 kg satellite in a low earth orbit of 400 km, will, enhance India's launch vehicle capabiility more than three times from SLV-3.

The new technologies being experimented for the first time in the ASLV included the closed loop guidance system with on-board computer, s-band range and range rate transponder to aid injection tracking of the ASLV bulbous metallic heat shield with radio frequency transparency provision to accommodate large volume spacecraft, micro-processor checkout systems with distributed processing concepts and the strap-on motors with canted nozzles to augment booster capability.

The ASLV will put into orbit the first of the 150 kg class "Stretched Rohini Satellite Series" (SROSS).

The SROSS-1 will be mainly a technological mission intended to monitor launch vehicle performance of ASLV to validate in-orbit operation of spacecraft maintenance elements.



The second mission in this series, also scheduled for 1987, will be a collaborative experiment in remote sensing between ISRO and the West German Space Agency. Two more SROSS missions are also planned which will carry out aeronomy experiments proposed by the physical Research laboratory and a joint ISRO-TIFR expriment using an X-ray payload.

The SROSS satellite will incorporate a number of technology developments which would be used in the Indian Remote Sensing Satellite and INSAT-II.

environmental monitoring and meteorological forecasting. To achieve these ends, India is actively involved in developing and operationalising a series of satellite and launch vehicle systems.

Organisation. The Indian Space programme began with the setting up of a sounding rocket launching facility at Thumba, a fishing hamlet near Trivandurm in 1963. The Thumba Equatorial Rocket Launching Station (TERLS), which in 1968 was dedicated to the United Nations Organisation, served as the nucleus for the growth of Indian Space Research Organisation (ISRO), which today encompasses the following Centres.

(1) Vikram Sarabhai Space Centre (VSSC), Trivandrum; (2) SHAR Centre, Sriharikota; (3) ISRO Satellite Centre (ISAC), Bangalore; (4) Auxiliary Propulsion System Unit (APSU), Bangalore; (5) Space Applications Centre (SAC), Ahmedabad; (6) Development & Educational Communication Unit (DECU), Ahmedabad; and (7) ISRO Telemetry, Tracking & Command Network (ISTRAC) with its headquarters at Bangalore.

The Department of Space (DOS) located at Bangalore is responsible for the execution of India's Space activities through ISRO. Th Physical Research Laboratory (PRL) a Ahmedabad, an institution supported mainl by DOS, conducts research in space an related sciences. The DOS-supporte National Remote Sensing Agency (NRSA) a Hyderabad, is engaged in using remot sensing techniques for the survey and management of natural resources.

Second Indian To Space

The Second Indian consmonaut will probably be flown into space on board the US space shuttle during the launch of INSAT-ID in 1988-89.

Indian Space Research Organisation chairman U.R. Rao says that one of the two trained for the odyssey - Mr. N.C. Bhat of ISRO and Mr. P. Radhakrishnan of Vikram Sarabhai Space Centre, Trivandrum- would be taken as a payload specialist in the shuttle.

Orginally, one of them was scheduled to deploy Insat-IC during a joint Indo-American space mission on NASA's space shuttle.

This programme was, however, upset when the space shuttle Challenger blew up soon after launch in January 1986. Subsequently, a Delta rocket also falled and India turned to Ariane Spae of France for launch of INSAT-IC. The satellite, to be placed in orbit by an Ariane launcher in 1988, would be an in orbit spare for INSAT IB now in use.

Own Spacecraft. The Indian Spac Programme took a major forward step wit the launching of the first indigenously buil spacecraft, Aryabhata, in 1975. This 360-k satellite, designed to acquire the basic expertise in satellite technology, was place into orbit from the Soviet Union by a Sovie rocket carrier.

Aryabhata was followed by ***Bhaskara–1*** an experimental earth observation satellite Launched in 1979, Bhaskara–1 carried T camera and microwave radiometer payload for Earth observation studies in hydrology forestry, snow melting and oceanography An improved version of this satellite, Bhaskara-II, was launched in 1981. The Bhaskar Satellites were also launched by Sovie rocket carriers.

In the area of satellite communication ISRO conducted two largescale experiment relevant to India's communication need They were: (a) Satellite Instructional Television Experiment Project (SITE) during 1977-79. Under SITE, developmental programme were telecast direct to community receiver in 2,400 villages, using the American satellite ATS–6. Similarly, with the aid of the Franco German 'Symphonie' spacecraft, a series o innovative communication experiments wer conducted under STEP.

Launch Vehicle. Parallel t spacecraft technology, India took steps fo building its own first satellite launch vehicle SLV–3. The four–stage, solid propellant SLV 3, during its three successful flights in 198 1981 and 1983, orbited Indian–built Rohin series satellites.

In June 1981, India's first experimenta geostationary communications satellite, A PLE, was successfully launched aboard th European Space Agency's Ariane launc vehicle from Kourou in French Guyan During this satellite's active in-orbit life of 2 months, it was used to conduct a variety

Milestones In Indian Space Programme.

1962: *Indian National Committee for Space Research (INCOSPAR) formed by the Department of Atomic Energy, Government of India to aid and advise in starting the space programme.*

1963: *Thumba Equatorial Rocket Launching Station (TERLS) established in response to the longfelt need of scientists to make* ***in-situ*** *measurements of upper atmospheric parameters, particularly of equatorial electrojet.*

1965: *The Space Science & Technology Centre (SSTC) established in Thumba as a research and development laboratory in space technology for achieving self-reliance in this field.*

1967: *An earth station for satellite telecommunication set up at Ahmedabad to provide facilities for training and research in this technology. Engineers trained here help set up the first Indian commercial satellite telecommunication earth sation at Arvi, near Ponna.*

1968: *TERLS dedicated to the United Nations.*

1972–1976: *A number of air-borne remote sensing experiments conducted for surveying earth resources.*

1975: *The first Indian Satellite, Aryabhata, launched on April 19, 1975 from the Soviet Union.*

1975–1976: *The first major space application programme. Satellite Instructional Television Experiments (SITE), conducted during August 1975, July 1976 using the American Satellite, ATS–6.*

1977: *The Satellite Telecommunication Experiments Project (STEP) carried out from the middle of 1977 to 1979 using the Franco–German satellite, Symphonie.*

1979: *The Second Indian Satellite, a satellite for Earth observations, Bhaskara, launched on 7th June 1979 from the Soviet Union.*

1980: *SLV–3, India's first Satellite Launch Vehicle, puts Rohini Satellite into a near–earth elliptical orbit from Sriharikota on 18th July, 1980.*

1981: *India's first experimental geostationary communication satellite, APPLE, successfully launched by ESA's Ariane Launch Vehicle from Kourou, Frecnh Guyana, on 19th June 1981. India's second satellite for Earth observation, Bhaskara–II, launched from the Soviet Union on 20th November, 1981.*

1983: *Second developmental flight of SLV–3 successfully conducted from Sriharikota on 17th April 1983 and RS–D–2 satellite orbited. INSAT–1B India's multipurpose domestic satellite, launched on board USA's Space shuttle, 'Challenger' on 30th August 1983.*

1984: *The first joint Indo–Soviet manned mission launched on 3rd April, 1984. Sqn. Ldr Rakesh Sharma became the first Indian cosmonaut.*

1985: *Two Indians selected for Indo-US joint Shuttle flight.*

dvanced satellite communication experiments. It also provided live TV coverage of elected national events.

The successful launching of INSAT–IB, a ulti-purpose domestic satellite, on board e American Space Shuttle in 1983 , and its perationalisation has given India the capaility of country-wide domestic telecommunications, meteorology and direct community TV broadcasting.

arger Vehicle. The SLV–3 project rovided India with the expertise for mbarking on the development of larger and more sophisticated launch vehicles. Currently, an Augmented Satellite Launch Vehicle (ASLV) designed to orbit 150-kg satellites and a Polar Satellite Launch Vehicle (PSLV) capable of injecting 1000-kg class satellites into a polar sun-synchronous orbit are under development.

To meet the payload requirements of ASLV, expected to be ready in 1985, ISRO is now developing a series of 150-kg spacecraft called Stretched Rohini Satellite Series (SROSS) covering selected missions in the areas of scientific research, technology and remote sensing.

Another important project on hand is the Indian Remote Sensing Satellite (IRS) series. The first such satellite is scheduled to go into orbit in 1986 launched from the Soviet Union. The three-axis stabilised 850-kg IRS will carry payload to collect data on agriculture, forestry, hydrology, snow-melting and meteorology.

Sounding Rockets. ISRO had developed and qualified a series of Sounding Rockets like RH-125, RH-200, Centure, RH-300, RH-560, etc., for meteorological and upper atmospheric research. RH-560 is India's largest Sounding Rocket capable of reaching an altitude of 350 km with a 100-kg payload weight. Flights are regularly conducted from India's three sounding rocket ranges at Thumba, Sriharikota and Balasore.

India attaches great importance to co-operation with other countries and international agencies, most prominent among them being the USSR, the USA, The Federal Republic of Germany (FRG), France, the European Space Agency (ESA), the United Kingdom (UK) and the United Nations.

Indo-Soviet collaboration in Space began with the USSR extending technical assistance to India in setting up her Thumba Equatorial Rocket Launching Station (TERLS), way back in 1962. TERLS was dedicated to the United Nations in 1968 and has since operated as an international sounding rocket range.

Regular meteorological soundings are being jointly conducted from TERLS by India and the USSR using the Soviet M-100 rockets. The collaboration between the two countries further intensified with the USSR offering free launches for the three Indian satellites, Aryabhata, Bhaskara-I and Bhaskara-II.

USSR Help. The USSR also helped India establish her Satellite Tracking & Ranging Station (STARS) and offered the Luna-24 moon rock samples to Indian scientists for investigation. Scientists from the two countries have also conducted joint balloon experimants in gamma-ray astronomy from India's balloon facility at Hyderabad.

With the successful completion of the eight-day Indo-Soviet joint manned mission abroad Soyuz-T-11/Salyut-7, the collaboration between the two nations in the peaceful use of outer space, which entered its twenty-

INSAT-IB'S 4th Year in Space

Indian multi-purpose satellite, INSAT-IB has entered the fourth successful year of its space odyssey, even as more INSAT satellite launches are on the horizon from early 1988 into the 1990's.

Shot into space by the eighth flight of the US NASA space shuttle, the satellite which was brought into operational service from Oct 15, 1983, has performed satisfactorily, barring a brief 'loss of lock' in August 1984, when its services were disrupted for 36 hours.

Monthly transmission of TV programmes on INSAT-IB averaged about 750 hours and that of programmes on All India RAdio, about 2,600 hours.

Thirty eight telecommunications earth stations were in operation in the INSAT-IB network, providing some 3960 two-way voice circuit or equivalent circuits over 69 routes.

The Very High Resolution Radiometer (VHRR), the meterological imaging instrument on board the satellite, had been commanded to give over 13,560 images - 13,481 full earth disc images and 85 setor scans.

100 Data Collection Platforms (DCPs), including the one at the Indian base station in Antartica, and an equal number of Disaster Warning System (DWS) receivers in selected cyclone prone Eastern coastal areas of Andhra Pradesh and Karnataka had been deployed to use the satellite.

Besides, the satisfactory working of the prototype equipment for the Press Trust of India (PTI),s satellite-based news and facsimile dissemination system had been tested with INSAT IB.

Steps were being taken to meet the enhanced requirements for INSAT-IB services and applications and a number of new requirements for new applications and capacities were being processed.

The string of INSAT satellite launches - INSAT-IC, INSAT-IB and second generation INSAT (INSAT-two) satellites are being planned from early 1988 through early 1990's.

second year in 1984, literally came of age.

The launch of the first Indian Remote Sensing Satellite (IRS), scheduled to take place during 1986, would again be from the USSR on board the first launch vehicle commercially procured from that country.

The dedication of TERLS to the UN; the conduct of instructional television experiments via USA's ATS-6 satellite and communication experiments using the Franco-German 'Symphonie' spacecraft; the launching of Aryabhata and Bhaskara spacecraft by the Soviet Union and of APPLE on board ESA's Ariane; and the orbiting of INSAT-1B USA's Space Shuttle are important landmarks in India's policy of active collaboration with other countries in harnessing Space for national development.

As part of ISRO's co-operation with industry, many technologies/processes developed by ISRO in the areas of electronics, chemicals and materials have been transferred to Indian industries for commercial production.

THE DAY OF THE CONSUMER

A recent study indicated that Indian consumers are cheated to the extent of about Rs. 2000 crores a year. By any standard this is a very large sum to be deprived of a society which is one of the poorest in the world.

In a country where illiteracy is still widespread, awareness of rights of consumers ought to be very little. Moreover, the organised sector has all the advantages. The consumers are clumsy and the pity is that they do not even know they are being fleeced.

There are at present about 30 laws to protect the consumer. But the fact is that these are not made use of to the maximum by the consumer.

In North America and Europe, the government, the politician, the business and the labour are bound to take into consideration the view point of the consumers in any decision affecting their interests. Specific legislations for the protection of the rights of consumers have not only been enacted but are also strictly enforced. James Ralph Nader, the kingpin of US consumerism has become a legendary hereo in modern times.

In India, consumer protection laws are enacted by both the centre and state governments and a number od authorities are involved in enforcing the same. Lack of co-ordination is a great pitfall.

Burden of Proof. One of the weaknesses of legislation on consumer protection is the confusion regarding the burden of proof. It is not clear whether the onus of proof rests with the manufacturer, the trader or the consumer.

The provision of 'local' taxes extra' is one of the most abused one. There is no way for the consumer to know what are all the 'local taxes' and its quantum. To question the traders on this point, the consumer should be well-versed in various tax structures. This is a burdensome task. As a matter of fact, the government has issued a notification under the Packaged Commodity Rules making it mandatory for traders to display prominently all local taxes payable by the consumer.

According to a study by a sociology professor of Bombay, 187 consumer groups, spread over 8 states, (Gujarat alone accounts for 45) exist in India. For a vast country like India, these are inadequate to monitor and co-ordinate the various legislations and keep a watch on unfair trade practices.

The voluntary organisations are, no doubt, doing useful work. Apart from these counsumer groups there is the Council for Fair Business Practices, set up by the leading manufacturers and traders in Bombay, which attend to the complaints of consumers. Among voluntary organisations, Consumer Guidance Society, Bombay and Consumer Education & Research Centre, Ahmedabad are quite active.

Recently, the Monopolies and Restrictive Trade Practices act was modified, which gave the MRTP commission wide powers. The commission has now actively entered the scene to protect the consumers. The Director General (Investigation) of the commission has wide powers, who investigates complaints from consumers and recommends course of action, including prosecution, to the Commission. The Director General (Investigation) has his office in New Delhi (Travancore House, Kasturba Gandhi Marg, New Delhi).

Any sort of complaints, such as false and misleading advts, poor quality of goods etc. are looked into by the MRTP Commission. In October 1986, MRTP Commission issued a cease and desist order against Meco Tronics Pvt. Ltd., a distributor of Murphy products in South India. A bench of the Commission comprising the Chairman Justice G.R. Luthra and Mr. S.D. Manchanda directed the company not to indulge in unfair trade practices by falsely promising to give free gifts in contest when actually the gift's cost was recovered by raising product prices during the contest period.

The Commission ordered the company to pay costs of Rs. 2500 to the Director General of Investigation and Registration and directed it not to organise such contests in future.

The same bench also restrained Body Wrap-a Bombay based company with over 100 branches all over the country (which claimed its product-body wrap-as a remedy for obesity) from making any false claim in its advertisements and "thereby fleecing the general public".

Indictment. The five-page order of the MRTPC said the company had prima-facie indulged in unfair trade practices by "making false representation relating to its treatment and also the wrongful guarantee of the outcome of the treatment in the shape of loss of weight and volume of the body".

The application for an injunction had been moved by the Director General (Investigation & Registrations) Department of Company Affairs, Ministry of Industry following complaints against the company from Consumer Guidance Society, Bombay and several consumers.

The Commission had also issued interim injunctions against ITC, Bata India, Colgate-Palmolive, Burroughs Wellcome and Khaitan Electricals.

Legislation. The government too has come forward with strong legislation for consumer protection. The bunch of Acts defined the norms, functions and constitution of councils for protecting consumer interests. The objective is to provide a forum for settlement of consumer disputes and ensure speedy and inexpensive redressal of grievances. As these pertain to a state subject, the enactment will come into force by notification of state governments.

The council in each state is to be headed by the minister in charge of food and civil supplies. It will comprise secretaries of four related departments, four nominees of the government from voluntary organisations, two representatives of womens' organisations, two nominees from manufacturers and distributors and a nominee each from trade and scheduled castes. The director of consumer protection, a government official, will be the member-secretary.

Commission For Consumers

The government proposes to set up a national commission for consumer protection which will have the power of a civil court to deal with civil disputes and punish the guilty with a maximum punishment of three years of imprisonment and a fine of Rs. 10 Lakhs or both.

The minimum imprisonment envisaged is six months and a fine of Rs. one lakh or both. The government introduced the necessary legislation in this connection in 1986.

The Acts provided the consumer the right to file complaints to ensure the quality of commodity, the right to represent about the quantity, quality and price and the right to choose and the right to the be and to be redressed.

The Acts also provided for consumer redressal forum at civil district headquarters.

The forum which will be a quasi-judical body and will include eminent social workers with the power to settle all consumer disputes and award compensation upto Rs. one lakh, a consumer protection advisory council will be set up at the Centre level for the purpose.

The Council will have a term of three years and will help educate the public, arrange for testing of goods and publish results and carry out verification of trade claims.

Powers. The director can on the basis of information of unfair trade practices: require a trader, wholesaler, retailer or distributor to produce books, accounts or other relevant documents for examination which may be considered necessary; enter at any reasonable time -the premises of any trader, wholesaler, retailer or distributor who in his opinion is indulging in unfair trade practices and inspect any goods or relevant documents for evaluating the quality of the goods involved.

A forum known as the consumer disputes redressal forum for dealing with consumer disputes will be set up. It will consist of a person who is or has been qualified to be a judge of a high court (president) and a person of eminence in the field of education, economics or social welfare or a person who has served in the state government not below the rank of joint secretary and a woman social worker of eminence preferably with specialised knowledge or experience in consumer affairs.

Members of the forum will hold office for five years or up to the age of 65 years, whichever is earlier.

Any consumer may take a complaint on payment of a fee not exceeding Rs. 10 as may be prescribed, with regard to any defect in a commodity sold or delivered to him.

Minimal Fee. Any voluntary organisation representing consumers may make a complaint on payment of such fees (not exceeding Rs. 50)

For proceedings, the forum will have the same powers as are vested in a civil court under the code of civil procedure, 1908.

If the forum is satisfied that the concerned commodity suffers from any defect, it will direct the trader to remove the defect pointed out by the appropriate laboratory, pay to the complainant as damages an amount not exceeding 20 times the value of the concerned commodity as may be specified in the communication.

In the event of omission or failure of the concerned trader to discontinue production of the defective commodity within the time suggested by the forum or to make payment to the complainant specified in the communication, the forum will publish in the official gazette or through any other media the full text or any portion of the directions given by it.

STATES AND TERRITORIES

The Union of India, made up of 24 States and 7 Union Territories, is in a state of demographic transition. Demographic transition indicates the passage of a population from high mortality and fertility rates to low mortality and low fertility.

The 1981 Census count placed the Indian population at 685.2 million as on the first of March. The population has grown at an annual average rate of 0.83 per cent* between 1901 and 1951 and at a more rapid pace of 2.13 per cent in the post-independence period between 1951 and 1981. If this rate continues until the year 2000, the Indian population would be 1025 million, about one-half more than what it is today.

There are many stages in the demographic transition beginning with a declining mortality and continuing fertility to a stage where both mortality and fertility rates decline more or less at the same rate and keep the population stable over a period of time.

The difference is essentially a difference of ratios between mortality and fertility rates in population group. The Indian nation is not a population group in this sense. Rather, it is made up of various population groups. These population groups tend to be so small that even a State may contain a large number of such groups.

Major States. But at present, the States remain the lowest population group which can be demographically assessed. On this

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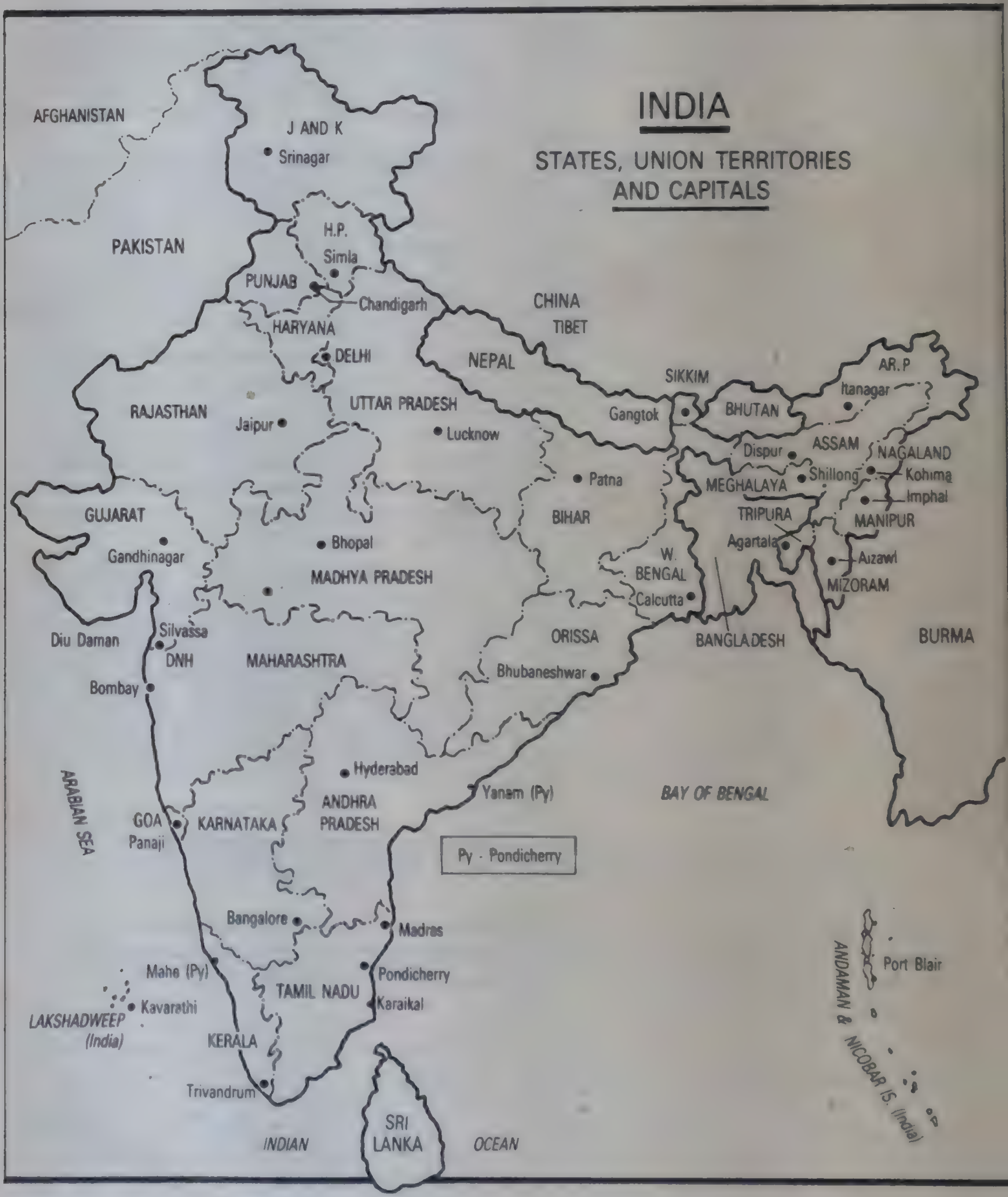
* Percentage based on the provisional figure of 684 months.


INDIA
STATES, UNION TERRITORIES
AND CAPITALS
AFGHANISTAN
J AND K
Srinagar
PAKISTAN
H.P.
Simla
PUNJAB
Chandigarh
HARYANA
DELHI
CHINA
TIBET
NEPAL
SIKKIM
Gangtok
AR.P
Itanagar
BHUTAN
RAJASTHAN
Jaipur
UTTAR PRADESH
Lucknow
Dispur
ASSAM
NAGALAND
Kohima
Shillong
MEGHALAYA
Imphal
Patna
TRIPURA
MANIPUR
BIHAR
Agartala
GUJARAT
Gandhinagar
Bhopal
W.
BENGAL
Aizawl
MIZORAM
MADHYA PRADESH
Calcutta
Silvassa
Diu Daman
DNH
MAHARASHTRA
ORISSA
BANGLADESH
BURMA
Bhubaneshwar
Bombay
Hyderabad
ARABIAN SEA
Yanam (Py)
BAY OF BENGAL
GOA
Panaji
KARNATAKA
ANDHRA
PRADESH
Py - Pondicherry
Bangalore
Madras
Mahe (Py)
Pondicherry
Port Blair
TAMIL NADU
Kavarathi
Karaikal
LAKSHADWEEP
(India)
KERALA
ANDAMAN & NICOBAR IS. (India)
Trivandrum
SRI
LANKA
INDIAN
OCEAN

basis, the 15 major States (excluding Assam, where the census has not been completed) may be grouped into four: (i) Jammu & Kashmir, Rajasthan, Uttar Pradesh and Bihar, (ii) Karnataka, Punjab and Andhra Pradesh, (iii) Haryana, Gujarat, Madhya Pradesh, Maharashtra and West Bengal and (iv) Kerala, Orissa and Tamil Nadu.

These 15 states contain 94.2 per cent o India's population. Only three states amon them (Kerala, Orissa & Tamil Nadu) with total population of 100 million or 15.5 pe cent, are in an advanced stage of transitio with a declining growth rate below 2 pe cent. The growth rates of another five state (group iii) with a total population of 21

Union of India: Basic Data

Region	Capital	Area (Sq. Km.)	Population (1981)
INDIA	New Delhi	3,287,263@	685,184,692

States:	Capital:	Area (sq. km.)	Population (1981)	Percentage to All India†
1 Andhra Pradesh	Hyderabad	275,068	53,549,673	7.82
2 Arunachal Pradesh	Itanagar	88,743	631,839	0.09
3 Assam‡	Dispur	78,438	19,896,843	2.90
4 Bihar	Patna	173,877	69,914,734	10.20
5 Gujarat	Gandhinagar	196,024	34,085,799	4.97
6 Haryana	Chandigarh	44,212	12,922,618	1.89
7 Himachal Pradesh	Simla	55,673	4,280,818	0.62
8 Jammu & Kashmir	Srinagar/Jammu*	222,236	5,987,389	0.87
9 Karnataka	Bangalore	191,791	37,135,714	5.42
10 Kerala	Trivandrum	38,863	25,453,680	3.71
11 Madhya Pradesh	Bhopal	443,446	52,178,844	7.62
12 Maharashtra	Bombay	307,690	62,784,171	9.16
13 Manipur	Imphal	22,327	1,420,953	0.21
14 Meghalaya	Shillong	22,429	1,335,819	0.19
15 Mizoram	Aizwal	21,081	493,757	0.07
16 Nagaland	Kohima	16,579	774,930	0.11
17 Orissa	Bhubaneswar	155,707	26,370,271	3.85
18 Punjab	Chandigarh	50,362	16,788,915	2.45
19 Rajasthan	Jaipur	342,239	34,261,862	5.00
20 Sikkim	Gangtok	7,096	316,385	0.05
21 Tamil Nadu	Madras	130,058	48,408,077	7.06
22 Tripura	Agartala	10,486	2,053,058	0.30
23 Uttar Pradesh	Lucknow	294,411	110,862,013	16.18
24 West Bengal	Calcutta	88,752	54,580,647	7.97

Union Territories	Headquarters	Area (sq. km.)	Population 1981	Percentage to All India
1 Andaman & Nicobar Islands	Port Blair	8,249	188,741	0.03
2 Chandigarh	Chandigarh	114	451,610	0.07
3 Dadra & Nagar Haveli	Silvassa	491	103,676	0.02
4 Delhi	Delhi	1,483	6,220,406	0.91
5 Goa, Daman & Diu	Panaji	3,814	1,086,730	0.16
6 Lakshadweep	Kavaratti	32	40,249	0.01
7 Pondicherry	Pondicherry	492	604,471	0.09

* Srinagar (Summer Capital), Jammu (Winter Capital)

† Uttar Pradesh, Bihar and Madhya Pradesh account for 34.0 per cent or more than one third of the total population of India.

‡ Projected.

@ The total area of the country represents provisional 'Geographical area as on 31st March 1982, supplied by the Survey of India. The area includes 78,114 sq. km. under illegal occupation of Pakistan, 5,180 sq. km. illegally handed over by Pakistan to China and 37,555 sq. km. under illegal occupation of China.

million or 33.6 per cent have started declinng, though still above 2 per cent. The remaining seven states (groups i & ii) with slightly above half the population (50.9 per cent), are just entering the demographic transition with declining mortality but with no significant decline in fertility.

Growth Rates. The growth rate for 1971-1981 averages at around 2.48 per annum for all India. As against this, the growth rate for group (i) is above 2.5 and for group (ii) around 2.5, both increasing trends. For group (iii) the growth rate averages below 2.5. Though this is still an increasing growth rate, it is on the low side. Group (iv) shows an average of less than 2, definitely a declining trend.

It may, therefore, be said that group (i) is in the earliest stage of transition with a declining mortality but a stable fertility. Group (ii) is next in the order of progression with a declining mortality. Their fertility is also o the decline but at a slower rate than that o mortality. Consequently this group still qualifies for being on the high side, with a slightly increasing trend in growth rate. Group (iii) shows a decline in both mortality and fertility.

There is a near parity between these rates which shows a declining trend in growth rates. Group (iv) shows a fertility which jus about compensates for loss in mortality, thus leading to a steady growth rate, which is sometimes called replacement rate. This group has thus reached the last stage in transition.

ANDHRA PRADESH

Area: 275,068 sq. km. **Capital**: Hyderabad. **Population**: 53,549,673. **Languages**: Telugu and Urdu. **Literacy**: 29.73.

Physiography. Andhra Pradesh is the fifth largest State in India, both in area and population. Bounded by MP and Orissa in the north, the Bay of Bengal in the east, T. Nadu and Karnataka in the south and Maharashtra in the west, AP forms the major link between the north and the south of India. The northern area of AP is mountainous with an annual rainfall of 45 to 50 inches. The highest peak *Mahendragiri* rises 4920 ft. above the sea level. As we go further south, the rainfall comes down to 20 inches annually. The climate is generally hot and humid. AP is principally fed by the south west monsoon, the north east monsoon contributing about one-third to the rainfall.

The *Krishna* and the *Godavari* are the major river systems in the State: The Godavari is the largest and the broadest river of South India. The Tungabhadra is an important tributary of the Krishna. Other important rivers are the Pennar, Vamsadhara and the Nagavali. All these rivers are rainfed, and are of great economic significance to the State because of their rich hydropower and irrigation potential.

History. The word 'Andhra' is equally applicable to the land, the people and the language, although the language in course of time developed a name of its own—*Telugu*.

The Andhras, originally an Aryan race migrated to the south of the Vindhyas where they mixed with the non-Aryan stocks Andhra Pradesh first enters history as part o the great Mauryan empire.

In the 13th century, the Kakatiyas, with their capital at Warrangal, dominated Andhra desa. In 1323, the Tughlak Sultan o Delhi captured the Kakatiya ruler and ended the dynasty. The Tughlaks never cared t annex the Kakatiyan dominions and four loca kingdoms arose out of the old Kakatiyan empire.

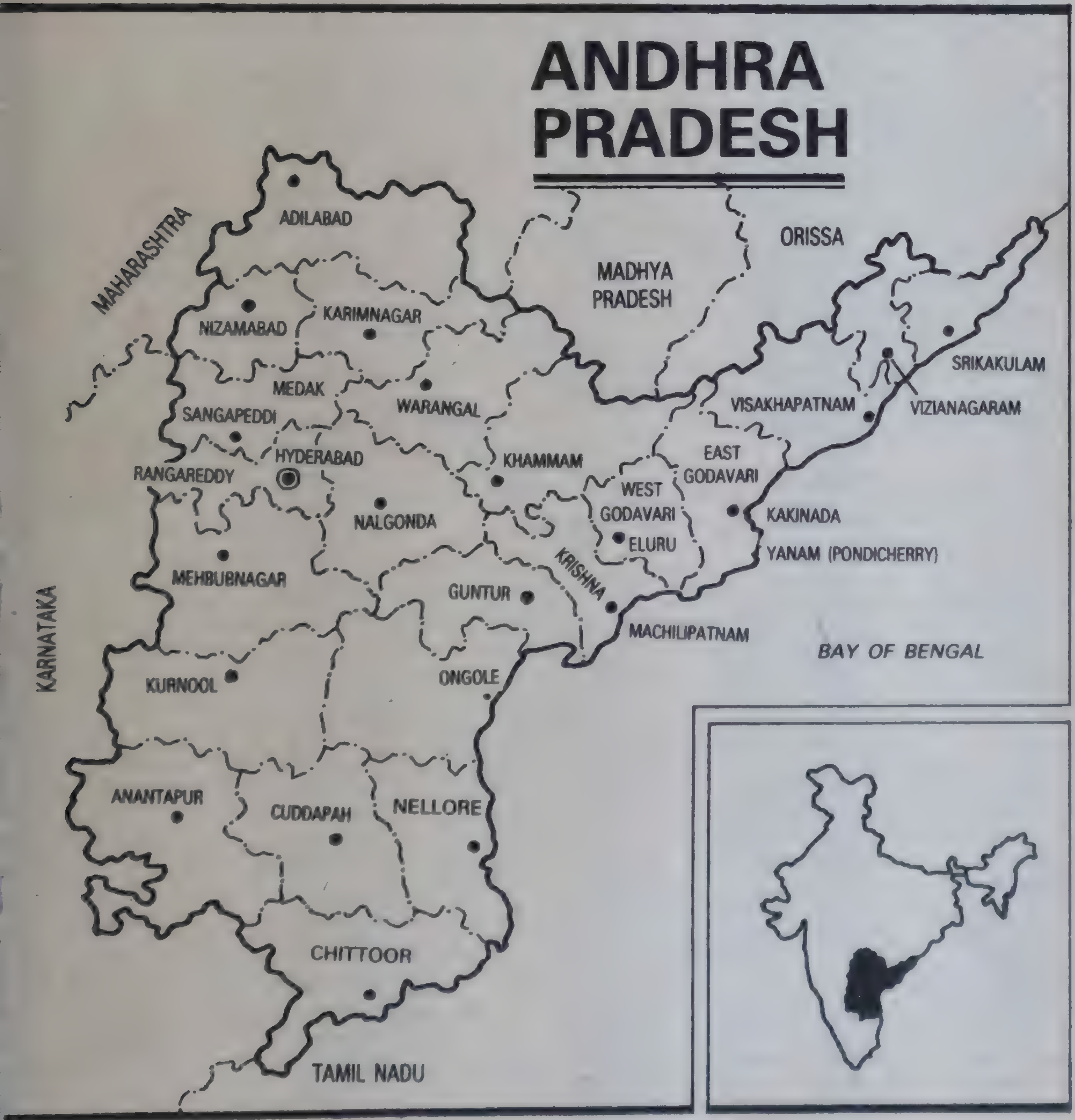
One of these kingdoms was Vijayanagar The Vijayanagar empire stood as a bulwark against Muslim expansionism for more than 200 years. Vijayanagar had to contend with Muslim sultanates in the north time and again. Sometimes Vijayanagar joined one sultan against another. These tactics finally led to a grand alliance of the sultanates o Ahmadnagar, Bijapur, Golconda and Bidar against Vijayanagar. On 23rd January, 1565 the Deccan sultans humbled the mighty Vijayanagar army at the battle of Talikota

The Qutb Shahis of Golconda laid the foundations of the modern city of Hyderabad Emperor Aurangzeb routed the Qutb Shahis and appointed Asaf Jah as the governor o Deccan. As the Mughal Empire tottered under Aurangzeb's successors, the Asaf Jahis made themselves independent rulers under the title of Nizam. The Nizams became involved in the Anglo-French wars in the Deccan and had finally to enter into subsidiary alliance with the British in 1800.

Andhra Pradesh is the first State in India hat has been formed on a purely linguistic basis. When India became independent, the Andhras, that is, the Telugu-speaking people, were distributed in about 21 districts, 9 of them in the Nizam's Dominions and 12 in he Madras Presidency. On the basis of an agitation on Oct. 1, 1953, 11 districts of the Madras State were put together to form a new Andhra State with Kurnool as capital.

On Nov. 1, 1956 in accordance with the recommendations of the States Reorganisation Commission, the Andhra State was enlarged, by the addition of nine districts formerly in the Nizam's Dominions. Hyderabad, the former capital of the Nizam, was made the capital of the enlarged Andhra State.

AP thus consisted of three distinct regions: (1) coastal region, made up of eight districts, generally called *Andhra*, (2) the interior


ANDHRA PRADESH
MAHARASHTRA
ADILABAD
ORISSA
MADHYA PRADESH
NIZAMABAD
KARIMNAGAR
SRIKAKULAM
MEDAK
WARANGAL
VISAKHAPATNAM
VIZIANAGARAM
SANGAPEDDI
HYDERABAD
EAST GODAVARI
RANGAREDDY
KHAMMAM
WEST GODAVARI
NALGONDA
KAKINADA
ELURU
MEHBUBNAGAR
YANAM (PONDICHERRY)
KRISHNA
GUNTUR
MACHILIPATNAM
BAY OF BENGAL
KARNATAKA
KURNOOL
ONGOLE
ANANTAPUR
CUDDAPAH
NELLORE
CHITTOOR
TAMIL NADU

region, consisting of four districts collectively known as *Rayalaseema* and (3) *Telengana* region, consisting of the capital of Hyderabad and nine adjoining districts.

From 1969 to 1972 AP was rocked by riots, first in Telengana, then in Andhra on the question of bifurcation of the State. The Central Government refused to consider the question of bifurcation. A six-point formula was put forward by the Prime Minister Mrs. Indira Gandhi as a compromise. The formula was generally accepted and peace was restored in the State.

The six-point formula has been incorporated into the Constitution as the Thirty-second Amendment 1973.

Administration. The legislature in the A.P. is unicameral, the Legislative Assembly has 295 seats. A.P. Legislative Council was abolished from June 1, 1985.

Andhra is divided into 23 districts. Two new districts created are Ranga Reddy district. (August 15, 1979, from Hyderabad District) and Vizianagaram district (June 1, 1979 from Visakhapatnam and Srikakulam districts). The headquarters for Ranga Reddy District for the time being is Hyderabad City and for Vizianagaram district, Vizianagaram city.

Districts

District	Area (sq. km.)	Population†	Headquarters
Andhra Region			
Anantapur*	19130	2548012	Anantapur
Chittoor*	15152	2737316	Chittoor
Cuddapah*	15359	1933304	Cuddapah
E. Godavari	10807	3701040	Kakinada
Guntur	11391	3434724	Guntur
Krishna	8734	3048463	Machilipatnam
Kurnool	17658	2407299	Kurnool
Nellore	13076	2014879	Nellore
Prakasam	17626	2329571	Ongole
Srikakulam	5837	1959352	Srikakulam
Visakhapatnam	11161	2576474	Visakhapatnam
Vizianagaram	6539	1804196	Vizianagaram
W. Godavari	7742	2873958	Eluru
Telengana Region			
Adilabad	16128	1639003	Adilabad
Hyderabad	217	2260702	Hyderabad
Ranga Reddy	7493	1582062	Hyderabad
Karimnagar	11823	2436323	Karimnagar
Khammam	16029	1751574	Khammam
Mahaboobnagar	18432	2444619	Mahaboobnagar
Medak	9699	1807139	Sangareddy
Nalgonda	14240	2279685	Nalgonda
Nizamabad	7956	1679683	Nizamabad
Warrangal	12846	2300295	Warranga
Total		53549673	

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* Rayalaseema.

† Census of India 1981.

State of Economy. A.P. has a widely diversified farming base, with a rich variety of cash crops. It is surplus in foodgrains and can rightly claim to be the granary of the south. Agricultural sector accounts fo around 50% of the State's income and provides livelihood to 70% of the population. The crops extensively cultivated in the state are paddy, jowar, bajra, ragi, maize, groundnut chillies, tobacco, cotton, castor and sugar cane.

A.P. leads all other states in the production of tobacco with a virtual monopoly of virginia tobacco. The production of tobacco in 1984-85 was 1.71 lakh tonnes and production of groundnut was 12.58 lakh tonnes. Production of food grain reached 96.15 lakh tonnes in 1984-85.

Andhra Pradesh which has for long been at the bottom of the industrial map of India today stands fifth in the country in terms of industrial development, sixth in respect of employment seventh in respect of output and eighth in respect of productive capital and value added.

There are 498 medium and large scale industries with a capital investment of nearly Rs 2677 crore, providing employment for more than 4 lakh persons. Further, there are 51,15 small scale units in the state with an investment of Rs. 695 crore, providing employmen for about 5 lakh persons.

The work on the steel plant at Visakhapatnam has also commenced. Foundation for the railway carriage repair workshop at Tirupat has been laid.

Tourist Centres. Andhra Pradesh is rich in historical monuments. It possesses many holy temples which attract large numbers of pilgrims and tourists.

Tirupati in Chittoor district houses one o the most famous temples in India. The presiding deity is known as Venkateswara. The main temple is situated on a hill-top, Tirumalai, and is a masterpiece of South Indian architecture.

The temple of Sriramachandra at Bhad

rachalam, the Mallikarjunaswami temple at Srisailam, the Ahobalam temple, Srikm temple and the Simhachalam temple are among the other famous temples of Andhra Pradesh. The main tourist attraction is the capital of the State, *Hyderabad*. The capital is in reality the twin cities of Hyderabad and Secunderabad linked together by the Hussain Sagar. Places of interest are the Char Minar built in 1591, Osmania University, State Museum and Art Gallery, Salarjung Museum, Health Museum and Public Gardens.

Another important centre of tourism is Golconda, about 5 miles from Hyderabad. The capital of the Qutb Shahi Sultans in the 16th century, Golconda is rich as historical monuments which include the famous Golconda Fort. Golconda was known the world over, as a rich mine of diamonds in the mediaeval times. The famous diamonds, *Kohinoor* and *Pitt,* came from the diamond mines of Golconda.

Governor: Kumud Ben Joshi, **Chief Minister:** N. T. Rama Rao. (Telugu Desam).

ARUNACHAL PRADESH

Area: 83,743 sq.km. **Capital:** Itanagar. **Population:** 6,32,000. **Languages:** Nissi, Adi, Wancho, Nocte, Bengali, English. **Literacy:** 20.9%.

Arunachal Pradesh (Land of the Dawn-lit Mountains) is a thinly populated hilly tract on the eastern most part of India, surrounded on three sides by the international border with Bhutan to the west, China to the north, Burma to the east and Assam to the south.

Physiography. Arunachal is entirely mountainous except for thin strips of flat land most of which adjoin Assam. Dense forests cover more than two-thirds of the territory. The hydel potential is very high.

The population of Arunachal is predominantly tribal. All the tribes belong to Scheduled Tribes. According to the 1981 census, Scheduled Tribes formed 79 per cent of the population as against an average of 7 per cent for the whole of India. There are about 20 major tribes which are divided into a number of sub-tribes. The principal tribes are: Adi, Nishi, Apatani, Tagin, Mishmi, Khampti, Nocte, Wancho, Tangsha, Singpho, Monpa, Sherdukpen, Aka, etc. These tribes speak their own tongues. These tribal people are colourful and hospitable and fond of music and dance.

History. Arunachal, originally known as the North East Frontier Agency (NEFA), was placed under the administration of the Union Government in 1948. It was declared a Union Territory under the name of Arunachal Pradesh on January 20,1972.

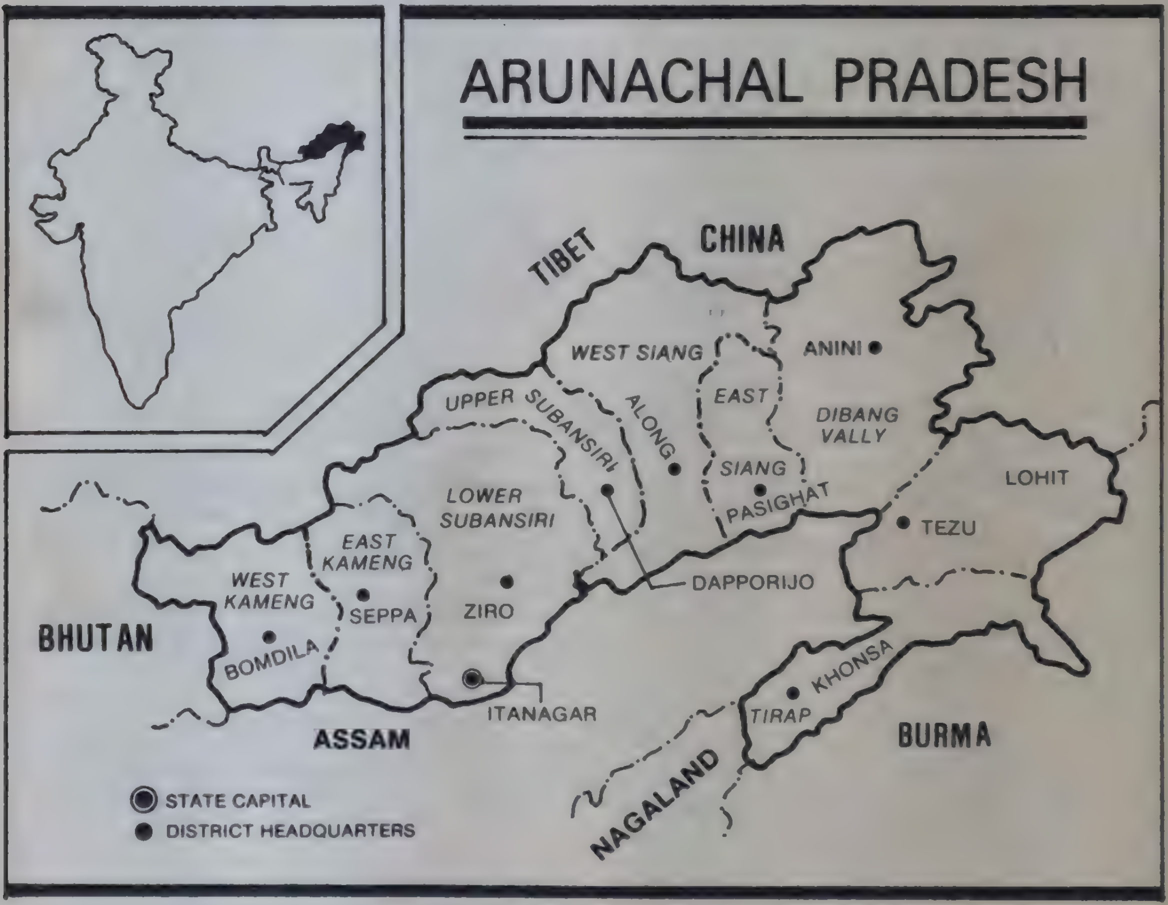
Administration. On 15th August 1975, the Pradesh Council of Arunachal Pradesh was converted into a Legislative Assembly. A Council of Ministers was also constituted.

The territory is divided into 10 districts, each under a Deputy-Commissioner. Itanagar is the capital of the territory and is in Lower Subansiri district. The State is administered by a Lt. Governor.

Districts

District	Population (1981 census)	Area (Sq.Km.)	Head quarters
West Kameng	63,302	9,594	Bomdila
East Kameng	42,736	4,134	Seppa
Lower Subansiri	1,12,650	13,010	Ziro
Upper Subansiri	39,410	7,032	Daporijo
West Siang	74,164	12,006	Along
East Siang	70,451	6,512	Pasighat
Dibang Valley	30,978	13,029	Anini
Lohit	69,498	11,402	Tezu
Tirap	1,28,650	7,024	Khonsa
Towang	NA	NA	Towang
Total	6,31,839	83,743	

State of Economy. Nearly 46 per cent of the population of Arunachal Pradesh is engaged in agriculture. Irrigated area forms 26 per cent of the total cultivated area of about 1,33,430 hectares. The traditional method of agriculture is Jhumming, a kind of shifting cultivation. The forests are cleared and crops are raised for one to three years, depending on the fertility of the soil. Thereafter the cultivators move on elsewhere. A determined effort is being made to wean the people from Jhumming. A total area of 56,270


ARUNACHAL PRADESH
TIBET
CHINA
WEST SIANG
ANINI
EAST
DIBANG VALLY
UPPER SUBANSIRI
ALONG
SIANG
LOHIT
LOWER SUBANSIRI
PASIGHAT
TEZU
EAST KAMENG
WEST KAMENG
SEPPA
ZIRO
DAPPORIJO
BHUTAN
BOMDILA
KHONSA
TIRAP
ITANAGAR
ASSAM
BURMA
NAGALAND
STATE CAPITAL
DISTRICT HEADQUARTERS

hectares of land has been brought under permanent cultivation. The main crops are rice, maize, millet, wheat and mustard.

About 61,000 sq.km of the territory is covered by the forest, which has become the important source of revenue of the territory.

The territory has a bright prospect of forest-based industries. A remarkable number of medium and small scale industries including saw mills, plywood and veneer mills, rice mills, fruit preservation units, oil expellers, besides handloom and handicraft industries have been established. The territory has 1086 units of small scale and 12 units of medium scale industries. A cement plant with a capacity of 30 tonnes per day and drilling of crude oil have been in progress. A paper mill with a capacity of 100 tonnes per day is also to be set up very soon.

Tourist Centres: Capital city of Itanagar with remnants of the Itafort, ancient Buddhist Monastery near Tawang, archaeological centres of Malinitan, Bismak Nagar, Nandapa Wildlife Sanchuary are of tourist interest.

Lt. Governor: Shiva Swarup.
Chief Minister: Gegong Apang.

ASSAM

Area: 78,438 Sq.Km. **Capital:** Dispur. **Population:** 19896843. **Language:** Assamese. **Literacy:** 36.7%.

Scholars are not agreed on the origin of the name "Assam". Some say that Assam is called so, because of its unequal terrain—that is, hills interspersed with valleys. They rely on a similar-sounding Sanskrit word, meaning unequal. This explanation appears to be far-fetched. A more acceptable version is that

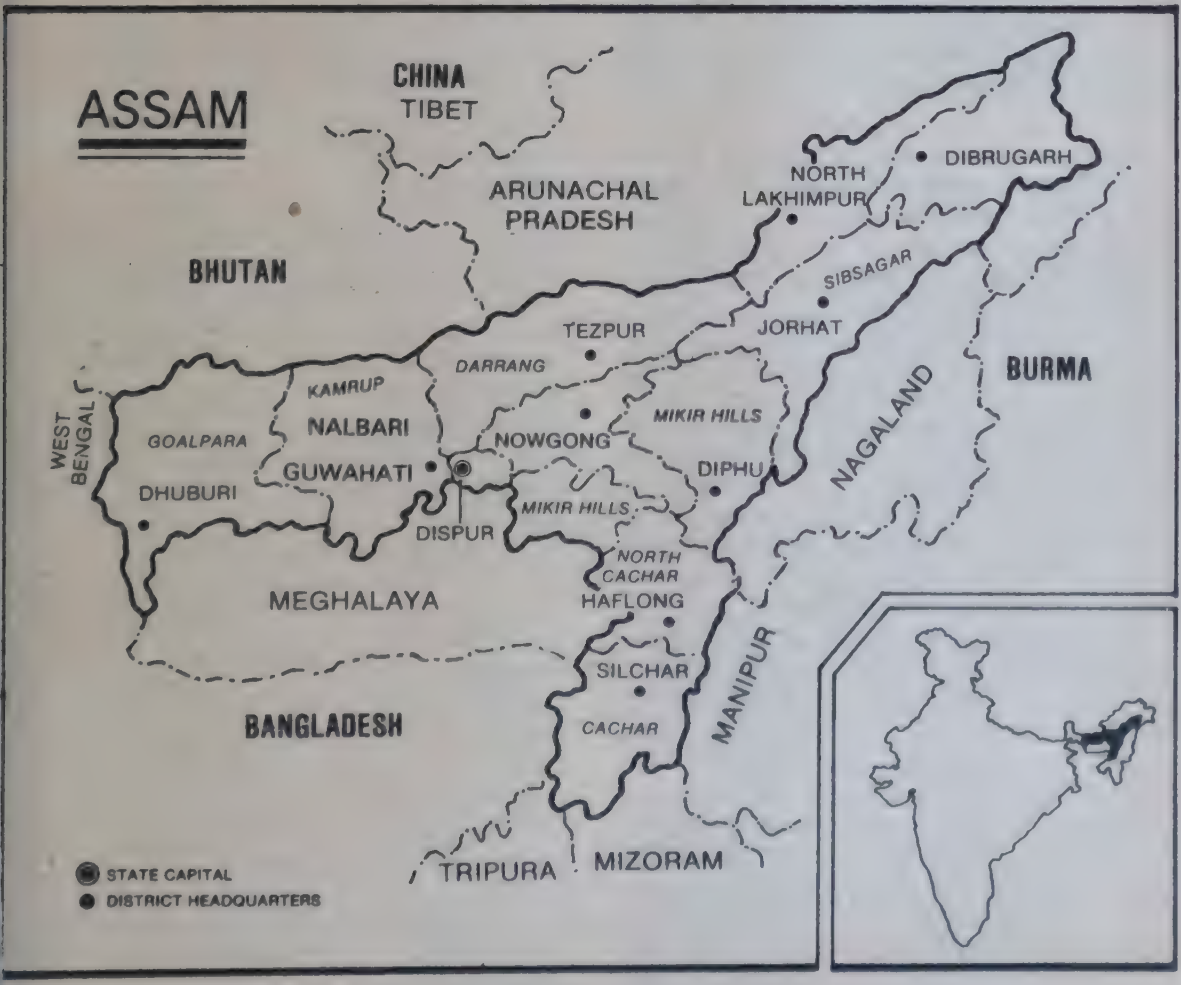
Assam is only the anglicised version of 'Asom'—which was the name the Ahoms gave to the country, when they conquered it.

Physiography. Geographically Assam is a shadow of its former self. It has been reduced to one-third of its original size in thirty years' time. In 1947 Assam had an area of over 2 lakh sq. km excluding the then North East Frontier Agency (NEFA), the present Arunachal Pradesh. Today the total area of Assam is only 78,438 sq.km. The depletion in geographical area resulted from political changes that came one after the other since 1947.

In the partition of India (1947) Assam lost Sylhet district, except a major portion of Karimjang sub-division, to East Pakistan, now Bangladesh. Out of the 27 lakh population of Sylhet, Assam retained only 7 lakh, the rest going to Pakistan. Thereafter, Assam continued to lose territory and population step by step as Nagaland, Meghalaya, Mizoram and Arunachal Pradesh were separated from it.

Assam, as it is today, may be divided into two important physical regions—the Barak valley and the Brahmaputra valley.

Assam is dominated by the Brahmaputra river. The total length of the river from the source to the sea is 2900 km. Its drainage area is roughly 935,500 sq.km. It has 120 tributaries. After travelling 1609 km through Tibet, the river turns southeast making a hair-pin bend at a place, a few miles east of Namcha Burwa. Thereafter it is joined by tributaries. After crossing the Garo Hills, it makes a southerly turn and meets the Ganga at Goalundo. During the course of its flow in


ASSAM
CHINA
TIBET
ARUNACHAL PRADESH
BHUTAN
NORTH LAKHIMPUR
DIBRUGARH
SIBSAGAR
JORHAT
TEZPUR
DARRANG
KAMRUP
NALBARI
GOALPARA
WEST BENGAL
DHUBURI
GUWAHATI
DISPUR
NOWGONG
MIKIR HILLS
MIKIR HILLS
DIPHU
NAGALAND
BURMA
NORTH CACHAR
HAFLONG
MEGHALAYA
SILCHAR
CACHAR
MANIPUR
BANGLADESH
TRIPURA
MIZORAM
STATE CAPITAL
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Assam for about 725 km through almost every district, the river has carved out an extensive valley of its own.

Rainfall in Assam is one of the highest in the world. It varies between 178 and 305 cm. All this rainfall is concentrated in 4 months, June to September. This concentration of rainfall affects the State in two diametrically opposite ways, namely floods and droughts.

History. An ideal meeting ground for diverse races, Assam gave shelter to streams of human waves carrying with them distinct cultures and trends of civilization. Austro-Asiatics, Negritos, Dravidians, Alpines, Indo-Mongoloids, Tibeto,-Burmese and Aryans penetrated into Assam through different routes and contributed in their own way towards the unique fusion of a new community which came to be known in later history as the Assamese. Assam, however, remained predominantly a land of the Tibeto-Burmese. The vast section of the people of Assam belong either to this stock or owe their origin to the fusion of this stock with other racial groups.

Assam, known in ancient lore as Kamarupa, originally included in addition to modern Assam, parts of modern Bengal and Bangladesh, Guwahati, the pulsating centre of Assam, is an ancient town whose history goes back to the Puranic days. The city, anciently known as Pragjyotishpur, was said to have been founded by King Narakasur, who is mentioned in the Puranas and epics. His son Bhagadatta led a large elephant force to the battlefield of Kurukshetra, and fell fighting on the side of the Kauravas.

In the 13th century, the country was conquered by the Ahoms under the leadership of Sukapha, a prince of the Shan tribe, in the Upper Irravaddy Valley.

The advent of the Ahoms changed the course of Assam's history. Ahoms fought the local Karchari, Chutia and Moran kings and established their sway in course of time, over the whole of Brahmaputra Valley.

The Ahoms appointed Bharphakans (Viceroys) to rule Kamarupa and Gauhati became the capital of these Viceroys. The last of the Viceroys was Badanchandra, who in an ill-advised bid for power invited the Burmese to help him. The Burmese dislodged the Ahoms and dismissed their Viceroy, Badanchandra. The Ahoms appealed to the British for help.

The British defeated the Burmese in several battles, in what has since been called the First Burmese War. With the Treaty of Yandabo in 1826, the Burmese vacated Assam, leaving the British in possession. The conquered territory was placed under the administration of an Agent to the Governor General. In 1832 Cachar was annexed to Assam. In 1835, the Jaintia Hills were made part of Assam. Upper Assam was annexed to Bengal in 1839. In 1874 a separate province of Assam under a Chief Commissioner was created, with Shillong as Capital.

On the partition of India almost the whole of the predominantly Muslim district of Sylhet was merged with East Bengal (present Bangladesh). Dewanagiri in North Kamarupa was ceded to Bhutan in 1951.

On the partition of Bengal in 1905, Assam was united to the eastern districts of Bengal under a Lt. Governor. From 1912 the Chief Commissionership of Assam was revived, and in 1921 a Governorship was created.

Assam lost a good deal of its former territory, as a result of political changes, from time to time.

In 1948, the North East Frontier Agency was separated from Assam, for security reasons. In 1963, Nagaland was carved out of Assam as a full-fledged State. On 21st Jan. 1972, Meghalaya was cut out of Assam, as a separate State and Mizoram became a Union Territory.

Administration. The Legislature consists of only one house—the Legislative Assembly. The State is divided into 18 districts.

Districts

	Area in Sq. km	Headquarters
Barpeta	3,307.3	Barpeta
Cachar	5,102.2	Silchar
Darrang	3,465.3	Mangaldoi
Dhubri	2,745.5	Dhubri
Dibrugarh	7,023.9	Dibrugarh
Goalpara	2,843.8	Goalpara
Jorhat	6,400.0	Jorhat
Kamrup	6,601.4	Guwahati
Karbi Anglog	10,332.0	Diphu
Karimganj	1,839.0	Karimgan
Kokrajhar	4,716.5	Kokrajha
Lakhimpur	5,646.4	Lakhimpu

Nagaon	5,561.0	Nagaon
North Cachar	4,890.0	Haflong
Nalbari	2024.8	Nalbari
Pragjotishpur	47.3	Pragjotishpur
Sibsagar	2,602.9	Sibsagar
Sonitpur	5,255.2	Tezpur

Nalbari District was inaugurated on 14th August, 1985.

State of Economy. Assam is rich in mineral wealth. It holds a unique position in the production of mineral oil. Other minerals found in the State are coal, limestone, refractory clay, dolomite and natural gas.

Of the agriculture-based industries, tea occupies an important place. There are nearly 750 tea plantations in the State. Petroleum and petroleum products amount to a large share of the country's total output of petroleum and natural gas. The state has two oil refineries and the 3rd with a Petrochemical Complex is under way. There is also a public sector fertilizer factory at Namrup. Other industries are Sugar, Jute, Silk, Paper, Plywood, rice and oil milling. Important cottage industries are handloom, sericulture, manufacture of cane and bamboo articles, carpentry, smithy and manufacture of brass utensils. An export oriented handloom project has been started at Sualkuchi to exploit the export potentialities of Eri and Muga.

Tourist Centres. Tourism is only of recent origin.

The Government of India has approved the following two travel circuits in the State: 1. Guwahati-Kaziranga-Sibsagar. 2. Gauwahati-Manas.

The State Government has also, submitted a proposal for additional circuits: 1. Guwahati-Bhairabkunda-Orang-Bhaluking-Tezpur, 2. Guwahati-Diphu-Haflong-Silchar.

These circuits may be linked with Arun achal, Meghalaya, Manipur and Mizoram and will thus help the integrated development of tourism in the north-eastern region.

Governor: Bhisma Narayan Singh.
Chief Minister: Prafulla Kumar Mahanta (Asom Gana Parishad).

BIHAR

Area: 173,877 sq. km; **Capital:** Patna; **Population:** 6,99,14,734; **Languge:** Hindi; **Litercey:** 26.20%.

The name 'Bihar' is a corrupt form of 'Vihara' which means a Budhist monastery. Bihar, squeezed in between West Bengal, Orissa, MP and UP, reaches up to the Himalayas in the north and is completely landlocked. Bihar is bounded on the north by Nepal, on the south by Orissa, on the east by W. Bengal and on the West by MP and UP.

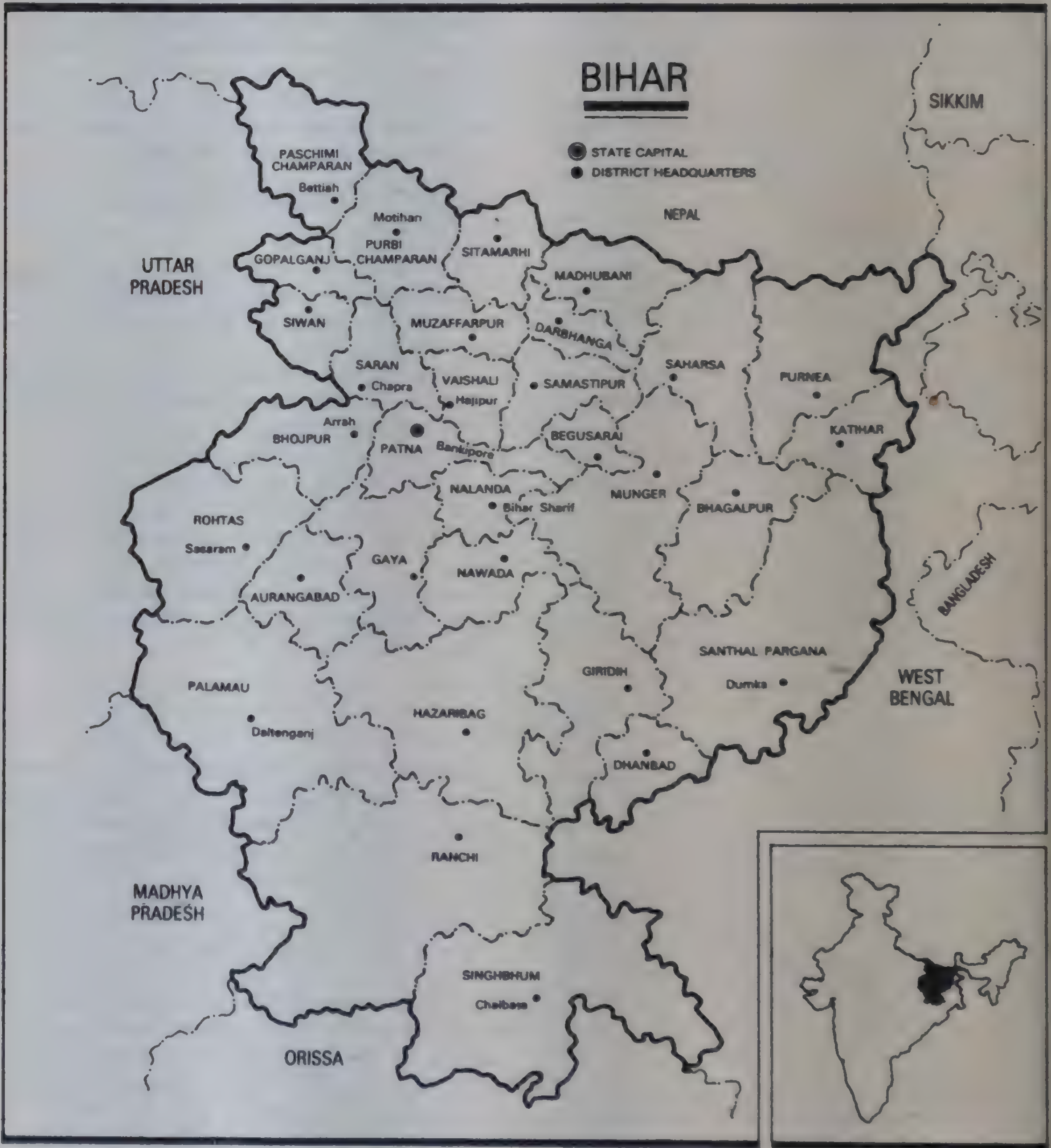
Physiography. Stretching from the Himalayan foothills in the north to Orissa in the south, Bihar suffers all the vicissitudes of changing seasons. It gets the worst of the cold and the worst of the heat and plenty of floods into the bargain.

The most striking geographical feature of Bihar is the sharp- division between north and south. The northern portion is almost entirely a level tract, while the southern region is wooded and hilly. North Bihar is an extremely fertile strip of land, the land being watered by the rivers Sarayu, Gandak and Ganga.

Southern Bihar, especially in and around the districts of Chota Nagpur and Santhal Parganas, is thickly wooded and consists of a succession of hills. The elevation varies from 300 to 1300m., the highest peak being 1372m.

History. Bihar has a very ancient glorious and colourful history. Bihar was the home state of the Mauryan emperors. Under Asoka the Great, Magadha and its capital Pataliputra became famous all over the world. With the death of Asoka, its fortunes declined. However, under the Gupta emperors it regained its lost glories. Under the Sultans of Delhi, and later under the Moghul emperors, Bihar was reduced to the status of a province, whose only importance was that it lay on the route from Bengal to Delhi.

When Sher Shah, a Behari himself, drove out Humayun and occupied the throne of Delhi, Bihar once again shot into lime-light. Sher Shah founded the city of Patna, on the site of the ancient capital Pataliputra and gave the country an efficient administration. Bihar enjoyed a period of peace and stablility under Akbar the Great and later Moghuls.


BIHAR
STATE CAPITAL
DISTRICT HEADQUARTERS
NEPAL
SIKKIM
UTTAR PRADESH
PASCHIMI CHAMPARAN
Bettiah
Motihari
PURBI CHAMPARAN
SITAMARHI
GOPALGANJ
MADHUBANI
SIWAN
MUZAFFARPUR
DARBHANGA
SARAN
Chapra
VAISHALI
Hajipur
SAMASTIPUR
SAHARSA
PURNEA
KATIHAR
Arrah
BHOJPUR
PATNA
Bankipore
BEGUSARAI
MUNGER
BHAGALPUR
NALANDA
Bihar Sharif
ROHTAS
Sasaram
GAYA
NAWADA
AURANGABAD
BANGLADESH
SANTHAL PARGANA
Dumka
WEST BENGAL
GIRIDIH
PALAMAU
Daltenganj
HAZARIBAG
DHANBAD
RANCHI
MADHYA PRADESH
SINGHBHUM
Chaibasa
ORISSA

Moghuls.

With the decline of the Moghul empire, Bihar passed into the hands of the Nawabs of Bengal. The British wrested the country from the Nawab of Bengal, by the decisive battle at Buxar in Bihar (1764). Under the British Bihar was first a part of the Bengal Presidency. In 1911, Bihar along with Orissa, was separated from the Persidency of Bengal. In 1936, Bihar and Orissa became separate provinces.

Administration. Bihar is one of the medium-sized states of India being the ninth in area. But in population it is the second biggest State in India, next only to Uttar Pradesh.

The Legislature consists of two houses–the Legislative Assembly and the Legislative Council. The State is divided in to 40 districts.

Districts

District	Area in sq. km.	Pupulation	Head Quarters
Patna	3,202.0	3,019,201	Patna
Nalanda	2,367.0	1,641,325	Biharsharif
Nawada	2,494.0	1,099,177	Nawada
Gaya	6,545.0	3,134,175	Gaya
Aurangabad	3,305.0	1,237,072	Aurangabad
Rohtas	7,213.0	2,366,325	Sasaram
Bhojpur	4,098.0	2,407,600	Arrah
Saran	2,641.0	2,084,322	Chapra
Siwan	2,219.0	1,778,930	Siwan
Gopalganj	2,033.0	1,362,123	Gopalganj
Paschim Champaran	5,228.0	1,972,610	Bettiah
Purab Champaran	3,968.0	2,425,501	Motihari
Sitamarhi	2,643.0	1,932,147	Sitamarhi
Muzaffarpur	3,172.0	2,357,388	Muzaffarpur
Vaishali	2,036.0	1,662,527	Hajipur
Begusarai	1,918.0	1,456,343	Begusarai
Samastipur	2,904.0	2,116,876	Samastipur
Darbhanga	2,279.0	2,008,193	Darbhanga
Madhubani	3,501.0	2,325,844	Madhubani
Saharsa	4,071.8	1,989,770	Saharsa
Madhepura	1,788.5	964,033	Madhepura
Purnia	7,943.0	3,595,707	Purnia
Katihar	3,057.0	1,428,622	Katihar
Monghyr	6,398.7	2,546,774	Monghyr
Khagaria	1,485.8	768,653	Khagaria
Bhagalpur	5,589.0	2,621,427	Bhagalpur
Santhal Pargana	5,518.3	1,215,542	Dumka
Deoghar	2,478.6	7,08,828	Deoghar
Godda	2,110.4	7,13,405	Godda
Sahebganj	3,405.4	1,079,753	Sahebganj
Dhanbad	2,996.0	2,115,010	Dhanabad
Giridih	6,892.0	1,731,462	Giridih
Hazaribagh	11,165.0	2,198,310	Hazaribagh
Palamu	12,749.0	1,917,528	Daltonganj
Ranchi	7,574.1	1,823,415	Ranchi
Gumla	9,077.1	1,017,231	Gumla
Lohardaga	1,490.9	2,29,786	Lohardaga
Singhbhum	13,440.0	28,61,799	Chaibasa

State of Economy: Bihar is ideally suited for agriculture. It has 115 lakh hectares cultivated land out of 174 lakh total ha. Presently only 85 lakh hectare land is being cultivated. The principal foodgrain crops are rice, wheat, maize and pulses. Main cash crops are sugarcane, oilseeds, tobacco, jute and potato. Forest covers about 19 per cent of the total area. Important forest products: timber, kendu, leaves, lac, gum, sal seed, etc. Bihar Forest Development Corporation collects seeds like Mahua, Karanj and Kusum.

In minerals Bihar is the richest State in India, accounting for nearly 40% of India's total production. Industries based on iron ore, coal, etc. are spread out around Jamshedpur, Bokaro, etc.

The Bihar State Industrial Development Corporation's new coming projects are Sponge Iron at Chandi, G.I. Sheets at Jamui, Nylon in Bhojpur, Solvent extraction plant at Latehar, Watch factory at Ranchi, Cement Plant at Patratu, Transmission Tower at Jasidhi, Bihar Fasteners at Gaya, etc. During 1985-86 10212 small scale industrial units have been registered.

Tourist Centres. Places of tourist interest are Rajigir, Bodh Gaya, Jamshedpur, Bokaro, Nalanda, Patna, Ranchi, Sasaram, Vaishali, Hazaribagh, Betla, Bhimbandh, etc. Bodh Gaya, near Gaya in Bihar, is a Budhdhist centre of pilgrimage. It contains the famous ancient temple near the Bodhi Tree under which Buddha got enlightenment.

Jamshedpur and Bokaro are steel towns.

Nalanda was one of the great seats of learning in ancient India and contains the ruins of many Buddhist temples and monasteries.

Patna, capital of Bihar, stands of the site on the ancient city of Pataliputra.

Sasaram is famous on account of the magnificent tomb of Sher Shah Suri, Emperor of Delhi.

Hazaribagh and Betla have national parks and wild life sanctuaries. Vaishali was the seat of ancient Lichavi Republic.

Governor: P. Venkata Subbaiah, **Chief Minister:** Bindeshwari Dubey (Congress).

GUJARAT

Area: 1,95,984 sq.km. **Capital:** Gandhinagar. **Population:** 3,40,86,000. **Language:** Gujarati. **Literacy:** 43.70%.

Gujarat, lying in the north-west corner of India, is the tenth in point of population (1981). It is bounded on the north-west by Pakistan, on the north by Rajasthan, on the east by MP and on the south and south-east by Maharashtra.

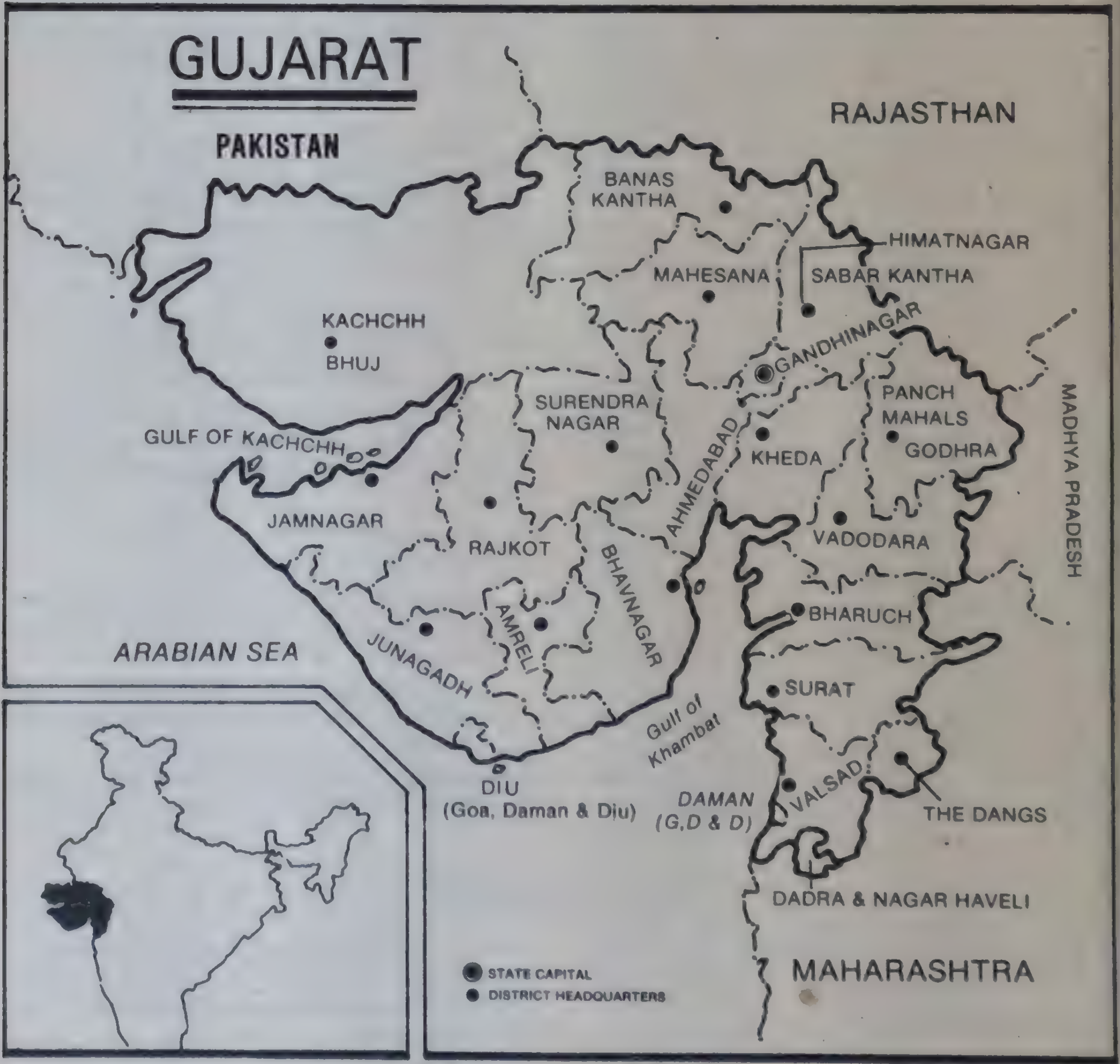
Physiography. The State of Gujarat

occupies the northern extremity of the Western seaboard of India. The State comprises three geographical regions. (1) The peninsula, traditionally known as Saurashtra. It is essentially a hilly tract sprinkled by low mountains. (2) Kutch on the north-east is barren and rocky and contains the famous Ranns (desert) of Kutch, the big Rann in the north and the little Rann in the east. (3) The mainland extending from the Rann of Kutch and the Aravalli Hills to the river Damanganga is on the whole a level plain of a alluvial soil.

The plains of Gujarat are watered by big rivers like Sabarmati, Mahi, Narmada, and Tapti and by smaller rivers like Banas, Saraswathi and Damanganga. The rainfall in the state, except in the arid zones of Surendranagar and north Gujarat, varies between 65 and 127 cm.

As the Tropic of Cancer passes through the northern border of Gujarat, the state has an intensely hot or cold climate. But the Arabian sea and the Gulf of Cambay in the West and the forest-covered hills in the east soften the rigours of climatic extremes.

History. On May 1, 1960, as a result of the Bombay Reorganization Act, 1960, the State of Gujarat was formed from the north and


GUJARAT
PAKISTAN
RAJASTHAN
BANAS KANTHA
HIMATNAGAR
MAHESANA
SABAR KANTHA
KACHCHH
BHUJ
GANDHINAGAR
SURENDRA NAGAR
PANCH MAHALS
GODHRA
MADHYA PRADESH
GULF OF KACHCHH
AHMEDABAD
KHEDA
JAMNAGAR
RAJKOT
BHAVNAGAR
VADODARA
BHARUCH
AMRELI
ARABIAN SEA
JUNAGADH
SURAT
Gulf of Khambat
VALSAD
DIU
(Goa, Daman & Diu)
DAMAN
(G,D & D)
THE DANGS
DADRA & NAGAR HAVELI
MAHARASHTRA
STATE CAPITAL
DISTRICT HEADQUARTERS

vest (predominantly Gujarati speaking) por- on of Bombay State, the remainder being enamed the State of Maharashtra. Gujarat onsists of the following districts of the ormer State of Bombay: Banas Kantha, Iehsana, Sabar Kantha, Ahmedabad, Kaira, ancha Mahals, Vadodara, Bharuch, Surat, Jangs, Amreli, Surendranagar, Rajkot, Jam- agar, Junagach, Bhavnagar, Kutch, Gandina- ar and Bulsar.

Administration. Gujarat has a un- cameral legislature, the Legislative Assem- ly, which has 182 elected members. The tate is divided into 19 districts.

Districts

istrict	Area (Sq.Km.)	Population	Head quarters
hmedabad	8,707	38,75,794	Ahmedabad
mreli	6,760	10,79,097	Amreli
anaskantha	12,703	16,67,914	Palanpur
haruch	9,038	12,96,451	Bharuch
havnagar	11,155	18,79,340	Bhavnagar
andhinagar	649	2,89,088	Gandhinagar
mnagar	14,125	13,93,076	Jamnagar
nagadh	10,607	21,00,709	Junagadh
heda	7,194	30,15,027	Kheda
achchh	45,652	10,50,161	Bhuj
ahesana	9,027	25,48,787	Mahesana
anchmahals	8,866	23,21,689	Godhra
ajkot	11,203	20,93,094	Rajkot
barkantha	7,390	15,02,284	Himatnagar
rat	7,657	24,93,211	Surat
redranagar	10,489	10,34,185	Surendranagar
angs	1,764	1,13,664	Ahwa
adodara	7,794	25,58,092	Vadodara
alsad	5,244	14,74,136	Valsad

tate of Economy. Gujarat ranks the st in the country in the production of cotton d groundnut and second in the production tobacco.

Cotton and groundnut have found good arkets and provide a foundation for impor- it industries like textiles, oil and soap. her important cash crops are isabgul, min, sugarcane, mangoes and bananas. e chief food crops of the state are paddy, ieat and bajra. Jowar and maize are oduced in local areas.

n 1984-85 production of cotton was 20.69 h bales, groundnut 20.61 lakh tonnes and dgrains 5.66 lakh tonnes. Gujarat has 19.66 h hectares of land under forest.

Gujarat has a dominant textile industry. New industries, which are coming up, are chemicals, petrochemicals, fertilizers, drugs and pharmaceuticals, dye-stuffs and engineering units of multiple types.

The state is a major producer of inorganic chemicals such as soda-ash and caustic soda as well as chemical fertilizers. It has the largest petro-chemical complex in the country.

The dairy industry has made tremendous advance and the state accounts for nearly 63 percent of infant milk produced in the country.

Exploration and production of oil and natural gas in Ankleshwar, Cambay and Kalol and oil refinery at Koyali are other industrial achievements. Near Bharuch Gujarat Narmada Valley Fertilizer Company has achieved great success. Ankleshwar industrial estate is humming with a number of industries. On the coastal areas of Saurashtra ship-breaking yards have taken shape at Alang and Sachana. Jamnagar, Porbander, Jafrabad, Bhavnagar, etc. are busy with new industries, trade and business.

Gujarat is a major salt producing state and its production forms as much as 60 per cent of the country's output.

Gujarat has now more than 70,000 small-scale units and 13,000 factories including 1328 textile factories. There are about 167 Industrial Estates in the State.

Tourist Centres. Gujarat has 4 national parks and 11 sanctuaries. The game sanctuary at Gir, the sacred temples of Dwaraka and Somanath, Palitana, the picturesque mountain city of Jain Temples on about 2000 feet high Shetrunjaya hills, Udwada, the oldest place of the Fire temple of Parsees in India, the 5000-year-old archaeological finds at Lothal, the 11th century Sun Temples at Modhera, bird sanctuary at Nal Sarovar, architectural monuments of Indo-Saracenic style at Ahmedabad and other places, the national shrine of Mahatma Gandhi at Sabarmati Ashram, Ahmedabad, Saputara hills in South Gujarat are just a few of the varied attractions in the state.

Governor: Ram Krishna Trivedi. **Chief Minister:** Amarsinh Chaudhary (Congress)

HARYANA

Area: 44,212 sq. km.; **Capital:** Chandigarh; **Population:** 12,922,618; **Language:** Hindi; **Literacy:** 36.14%.

The State is bounded by UP in the east, Punjab on the west, Himachal Pradesh in the north and Rajasthan in the south. The Union Territory of Delhi juts into Haryana and is encompassed by it on three sides.

Physiography. Haryana can be divided into two natural areas, Sub-Himalayan terai and the Indo-Gangetic plain. The plain is fertile and slopes from north to south with a height above the sea level averaging between 700 and 900 ft. The south west of Haryana is dry, sandy and barren. Haryana has no perennial rivers like its parent state Punjab or its eastern neighbour UP. In this respect, it has more affinity to its southern neighbour, Rajasthan. The only river which flows through Haryana is the Ghaggar, which passes through the northern fringes of the state. This river identified by some historians as the river Drishavaditi of Vedic fame is not perennial. Rainfall is meagre, particularly in the districts of Mahendragarh and Hissar.

For most of the year, the climate of Haryana is of a pronounced character, very hot in summer and markedly cold in winter. The maximum termperature is recorded in the months of May and June when it goes upto as high as 46 degrees C. The temperature falls to the lowest in January.

There are two well-marked seasons of rainfall in the State: (i) the monsoon period falling from the middle of June till September on which autumn crops and spring sowing depend, and (ii) the winter rains which occur from December to February. The Dec.-Feb. rains, though often insignificant in quantity, yet materially affect the prosperity of the spring harvest.

History. Haryana has a proud history going back to the Vedic age. The State was the home of the legendary Bharata dynasty, which has given the name Bharat to India. Haryana is immortalised in the great epic *Mahabharata*. Kurukshertra, the scene of the epic battle between the Kauravas and the Pandavas, is situated in Haryana. The state continued to play a leading part in the history of India till the advent of the Muslims and th rise of Delhi as the imperial capital of Indi Thereafter, Haryana has functioned as a adjunct to Delhi and practically remaine anonymous till the first war of Indian inde pendence in 1857 when the people Haryana joined the leaders of the India revolt against the British Government.

When the rebellion was crushed and th British administration reestablished, th Nawabs of Jhajjar and Bahdurgarh, the Ra of Ballabhgarh and Rao Tula Ram of Rewa of the Haryana region were deprived of the territories. Their territories were eithe merged with the British territories or hande over to the rulers of Patiala, Nabha and Jin Haryana thus became a part of the Punja province.

The modern State of Haryana came in being on November 1, 1966 as a result of th re-organisation of the old Punjab State in two separate states. It was formed as linguistic state, on the pattern of other stat in India, the Hindi-speaking areas of Punja having been assigned to it.

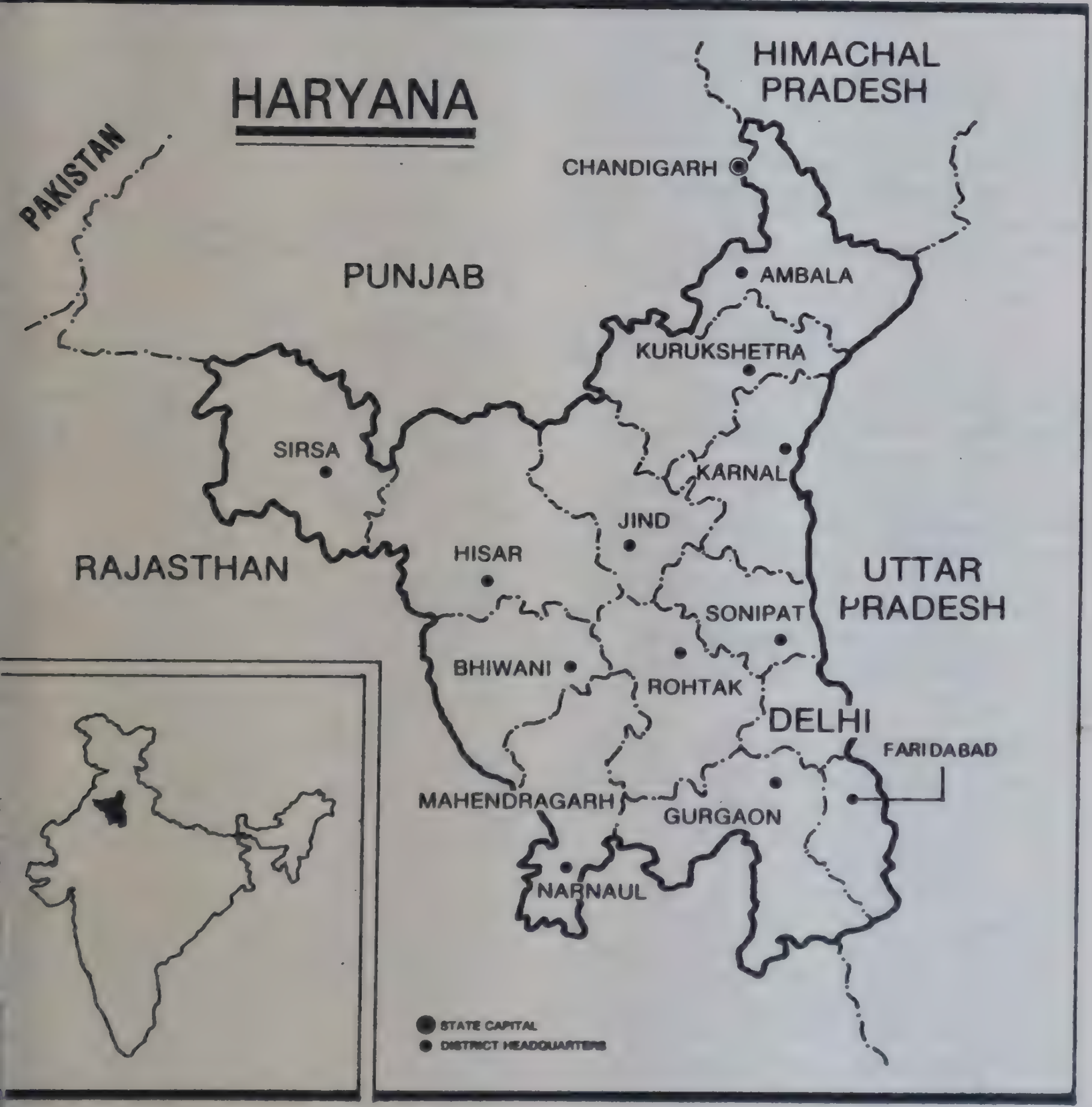
Administration. The legislature co sists of only one house—the Legislati Assembly. There are 90 members in t Legislative Assembly (Vidhan Sabha).

The State is divided into 12 districts.

Districts

District	Area sq. km.	Population	Hea quart
Ambala	3832	1409463	Amb
Kurukshetra	3740	1130026	Kurukshe
Karnal	3721	1322826	Kar
Jind	3306	938074	J
Sonepat	2206	846765	Sone
Rohtak	3841	1341953	Roh
Faridabad	2150	1000859	Faridab
Gurgaon	2716	849598	Gurg
Mahendragarh	3010	959400	Narn
Bhiwani	5099	920052	Bhiw
Hissar	6315	1496534	His
Sirsa	4276	707068	Si

State of Economy. Agricultu development in Haryana has be tremendous since independence. The p duction of foodgrains, sugarcane (g


HARYANA
HIMACHAL PRADESH
PAKISTAN
CHANDIGARH
PUNJAB
AMBALA
KURUKSHETRA
SIRSA
KARNAL
JIND
RAJASTHAN
HISAR
UTTAR PRADESH
SONIPAT
BHIWANI
ROHTAK
DELHI
FARIDABAD
MAHENDRAGARH
GURGAON
NARNAUL
STATE CAPITAL
DISTRICT HEADQUARTERS

eeds and cotton rose from 25.92 lakh nes, 5.10 lakh tonnes, 0.92 lakh tonnes and 5 lakh bales of 170 kg each in 1966-67 to 39 lakh tonnes, 6 lakh tonnes, 1.50 lakh nes and 5.50 lakh bales of 170 kg each pectively in 1982-83. Fertilizer consump- n increased from 0.13 tonnes in 1966-67 to 3 lakh tonnes in 1982-83.

Haryana was the first state to introduce p insurance scheme in north India. Dairy stry is also highly developed.

he major industries are cement, sugar, er, cotton, textiles, glassware, brassware, les, tractors, motor cycles, time-pieces, automobile tyres and tubes, sanitaryware, television sets, steel tubes, hand tools, cotton yarn, refrigerators, vanaspati ghee and canvas shoes, etc. A factory of the Hindustan Machine Tools producing tractors is located at Pinjore.

In all, there are at present more than 42,000 small scale industrial units in Haryana as well as 308 large and medium scale units. Exports rose to Rs. 150 crore in 1982-83.

Tourist Centres. Raj Hans, Badkhal Lake, Surajkund, Dabchik, Sultanpur, Barbet, Sohna and Pinjore. Haryana has a network of 32 tourist complexes.

The Golden Triangle of India—Delhi-Agra-Jaipur, and other places of tourist interest in the North viz. the Kashmir Valley, Simla, Amritsar, Chandigarh and Bhakra-Nangal hold great charm for potential tourists, both foreign and home. Haryana girdles Delhi from three sides with all the national highways to these tourist centres running through it.

'Hotel Raj Hans' stands above Surajkund and overlooks the Peacock Lake and bestows its comforts to foreign and domesti tourists coming to Delhi or Haryana.

Haryana Tourism has repeatedly wo awards from the Pacific Area Travel Association and the Travel Agents Association o India.

Governor: S. M. H. Burney. **Chief Minister:** Bansi Lal (Congress).

HIMACHAL PRADESH

Area: 55,673 sq. km.; **Capital:** Shimla; **Population:** 4,280,818; **Language:** Hindi and Pahari; **Literacy:** 43%

Himachal Pradesh became a fullfledged State of the Indian Union on January 25, 1971. With an area of 55,673 sq. km. it is larger than Punjab, Haryana or Kerala, but in population it stands much below. Historically, the 18th State in the Union, Himachal Pradesh is also the 18th in population (1981 census) but the 14th in area.

Physiography. Himachal Pradesh is situated in the north west corner of India, right in the lap of the Himalayan ranges. It is surrounded by Jammu and Kashmir in the north, Uttar Pradesh in the south east, Haryana in the south and Punjab in the west. In the east, it forms India's boundary with Tibet.

The State is almost entirely mountainous with altitudes ranging from 460 to 6600 metres above sea level. It has a deeply dissected topography, a complex geological structure and a rich temperate flora in sub-tropical latitudes.

Physiographically, the State can be divided into two regions, southern and northern. The southern part of Himachal Pradesh is almost as hot as the plains, while the northern region has a temperate summer and a winter with extreme cold and heavy snowfall. The districts of Shimla and Sirmaur have alluvial soil, while the remaining ten districts have forest and hill soils. The normal rainfall of Himachal is 181.6 cm. Maximum rainfall is noticed at Dharmasala in Kangra district

Himachal Pradesh is drained by a number of rivers, the most important of which are Chenab, Ravi, Beas, Sutlej and Yamuna. A these rivers are snow-fed and hence perennial. Besides, the natural reservoirs and th large drops available in the river course provide immense potential for hydel powe generation at a low cost.

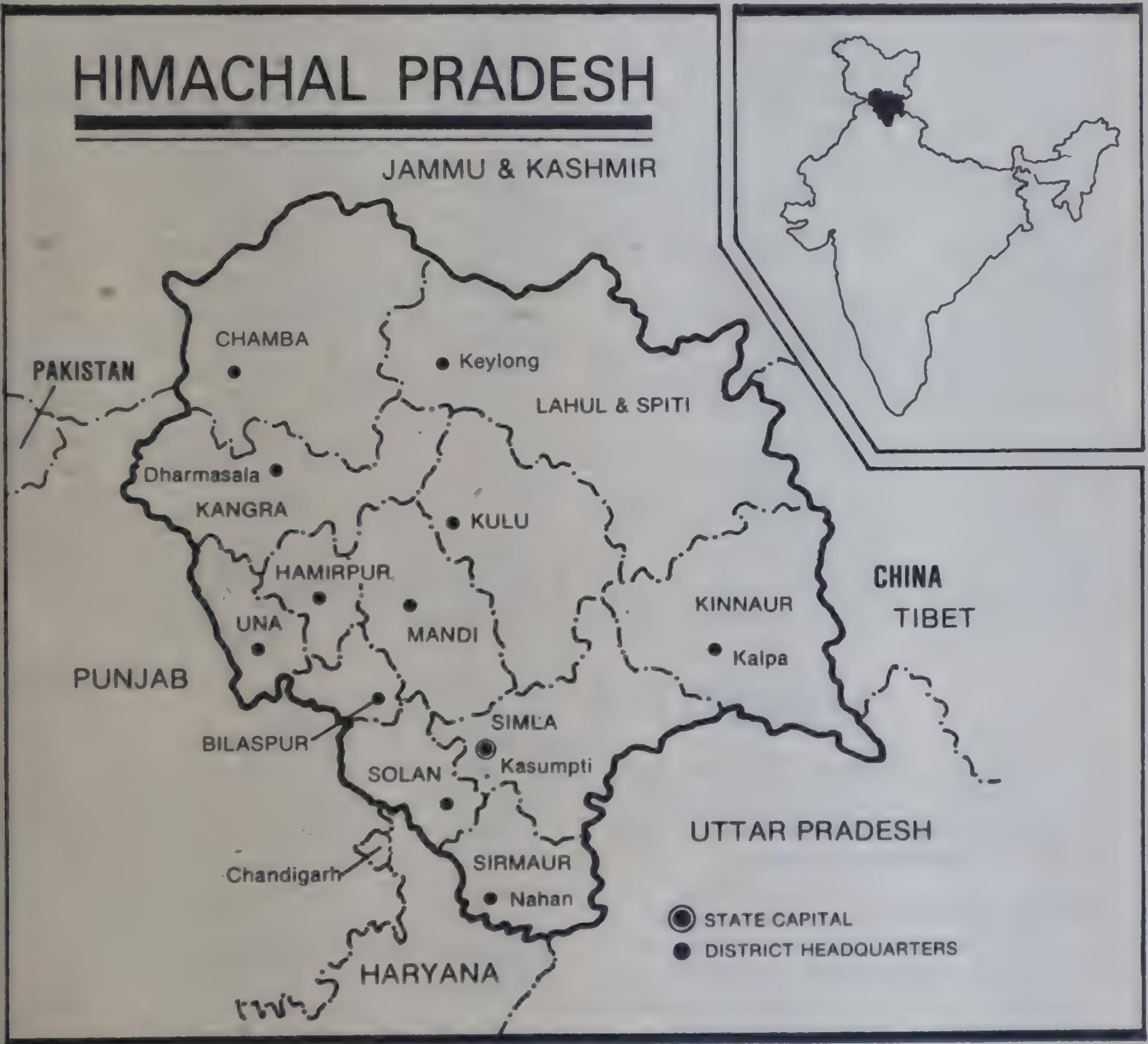
History. Himachal Pradesh was originall formed as a centrally-administered Territo on April 15, 1948 by the integration of som thirty and odd Punjab Hill States. In 1951, became a 'Part C' State Under a Lt. Governo with a Legislative Assembly of 36 membe and a Cabinet of three ministers. In 195 Bilaspur, another 'Part C, State was merge with Himachal Pradesh and the strength the Assembly was raised to 41 member

In 1956, the States Re-organisation Cor mittee recommended the merger Himachal Pradesh with Punjab. But the pe ple of Himachal Pradesh so stoutly oppose the merger that it was not put into effec

Till October, 1966 Himachal Pradesh co sisted of only six hill districts—Mahas Mandi, Chamba, Sirmaur, Bilaspur and Ki naur. In November, 1966, it was enlarged the addition of some of the hilly areas Punjab—Shimla, Kangra, Kulu, Lahaul a Spiti districts and the Nalagarh tehsil Ambala district and areas of Hoshiarpur a Gurdaspur districts.

Himachal Pradesh was re-organised i 10 districts and declared a State on Janua 25, 1971 with Shimla as its capital. In 1972- the districts were reshuffled bringing their number to 12.

Administration. There is only o house of legislature, i.e., Vidhan Sabha, w 68 members.


HIMACHAL PRADESH
JAMMU & KASHMIR
PAKISTAN
CHAMBA
Keylong
LAHUL & SPITI
Dharmasala
KANGRA
KULU
HAMIRPUR
UNA
MANDI
KINNAUR
Kalpa
CHINA
TIBET
PUNJAB
BILASPUR
SIMLA
Kasumpti
SOLAN
UTTAR PRADESH
Chandigarh
SIRMAUR
Nahan
STATE CAPITAL
DISTRICT HEADQUARTERS
HARYANA

The State is divided into the following 12 districts.

Districts

District	Area (sq. km.)	Population 1981	Density per (sq. km.)
Bilaspur	1167	247368	212
Chamba	6528	311147	48
Hamirpur	1118	317751	284
Kangra	5739	990758	173
Kinnaur	6401	59547	9
Kulu	5503	238734	43
Lahaul & Spiti	13835	32100	2
Mandi	3950	644827	163
Shimla	5131	510932	100
Sirmaur	2825	306952	109
Solan	1936	303280	157
Una	1540	317422	206
STATE	55673	4280818	77

State of Economy. Agriculture and horticulture are the mainstay of Himachal's economy as 76 per cent of people are engaged in these pursuits. Irrigated area forms 26 per cent of the net area sown. However, the agroclimatic conditions in the state are more suitable for growing a wide variety of fruits and cash crops like seed potatoes, ginger, vegetable seeds, apples, stone fruits, etc. Wheat, maize and paddy are the major cereal crops under cultivation. The production of food grains during 1984-85 was about 12.9 lakh tonnes as against 7.01 lakh tonnes during 1966-67 when the State was reorganised.

The State continues to be industrially backward despite vast natural resources endowment and plentiful availability of cheap hydel power. At the end of 1984-85, there were about 7000 small scale industrial units in organised sector employing about 42,000 persons besides numerous cottage and village industrial units. The commissioning of the most modern and sophisticated fruit processing plant at Parwanoo with a capital outlay of about Rs. 4.00 crore has been a landmark in the history of fruit processing in India.

As a result of various concessions/incentives, the pace of industrialization picked up and 58 medium and large scale projects were approved. Among major and medium industries are Nahan Foundry, Nahan; Rosin and Turpentine factories at Nahan and Bilaspur; Mohan Meakin Breweries, Solan; United Diamonds Ltd., Parwanoo. District Industries Centres in all the 12 districts are functioning. An Electronics Development Corporation has been set up in the state and electronics estates are being set up.

Tourist Centres. Himachal Pradesh is studded with a number of hill stations which are refreshingly cool in summer. They offer to the tourists a quick holiday amidst breath-taking scenery. Shimla, Dallhousie, Dharmasala, Kulu, Kasauli, Solan, Chail and Kufri are some of the famous hill stations.

Himachal Pradesh abounds in wild life among which are some rare species like musk deer, ibex, thar, Himalayan brown bear and snow leopard among animals and monal, tragopan, kokiash and snowcocks among birds. The rivers offer ideal fishing grounds for trout in Katrain, Rohru and Barot and for masheer in Maryoga, Karganuand and Dedahu.

Governor: Vice Admiral R.K.S. Gandhi (Rtd.), **Chief Minister:** Vir Bhadra Singh (Congress).

JAMMU & KASHMIR

Area: 2,22,236; **Capital:** Srinagar (Summer) Jammu (Winter); **Population:** 5,987,389; **Language:** Urdu, Kashmiri, Dogri, Ladakhi, etc.; **Literacy:** 26.17%.

Physiography. The State lies in the extreme north of the country and is bounded on the north by China, on the east by Tibet and on the south by Himachal Pradesh, Punjab and Pakistan. The official language is Urdu; other commonly spoken languages are Kashmiri, Dogri, Balti, Ladakhi and Punjabi.

History. The State of Jammu and Kashmir which had earlier been under Hindu rulers and Muslim sultans, became part of the Moghal Empire under Akbar. After a period of Afghan rule from 1756, it was annexed to the Sikh Kingdom of the Punjab in 1819. In 1846 Ranjit Singh made over the territory of Jammu to Maharaja Gulab Singh. After the decisive battle of Sabroon in 1846 Kashmir also was made over to Maharaja Gulab Singh under the Treaty of Amritsar. British supremacy was recognised until the Indian Independence Act 1947.

When all States decided on accession to India or Pakistan, Kashmir asked for standstill agreements with both. In the meantime, the state became subject of an armed attack from Pakistan and Maharaja acceded to India on 26th October, 1947 by signing the instruments of accession. India approached the U.N. in January, 1949. Another round of war between the two countries in 1965 was followed by the Tashkent Declaration in January 1966.

Following the Liberation movement in the former eastern wing of Pakistan, Pakistan attacked India in December, 1971, followed by the Shimla Agreement in July, 1972. A new line of control was delineated bilaterally to replace the cease-fire line between the two countries in Jammu and Kashmir.

The Maharaja's son Yuvraj Karan Singh took over as Regent in 1950 and on the ending of hereditary rule (17th October, 1952) was sworn in as a Sadar-i-Riyasat. On his father's death (26th April, 1961) Yuvraj Karan Singh was recognised as Maharaja by the Indian Government. He decided, however, not to use the title.

Administration. The Constitution of the state came into force in part on 17th November, 1956 and fully on 26th January, 1957. The constitution provides for a bicameral Legislature (i) the Legislative

Assembly (2) the Legislative Council.

The State comprises 14 districts of which 6 each fall in Jammu and Kashmir provinces and two in Ladakh region.

Districts

District	Area (sq. km.)	Population	Head-quarters
Anantnag	3,984	6,56,351	Anantnag
Badgam	1,371	3,67,262	Badgam
Baramula	4,588	6,70,142	Baramula
Doda	11,691	4,25,262	Doda
Jammu	3,097	9,43,395	Jammu
Kargil	14,036	65,992	Kargil
Kathua	2,651	3,69,123	Kathua
Kupwara	2,379	3,28,743	Kupwara
Ladakh	82,665*	68,380	Leh
Pulwama	1,398	4,04,078	Pulwama
Punch	1,674	2,24,197	Punch
Rajauri	2,630	3,02,500	Rajauri
Srinagar	2,228	7,08,328	Srinagar
Udhampur	4,550	4,53,636	Udhampur

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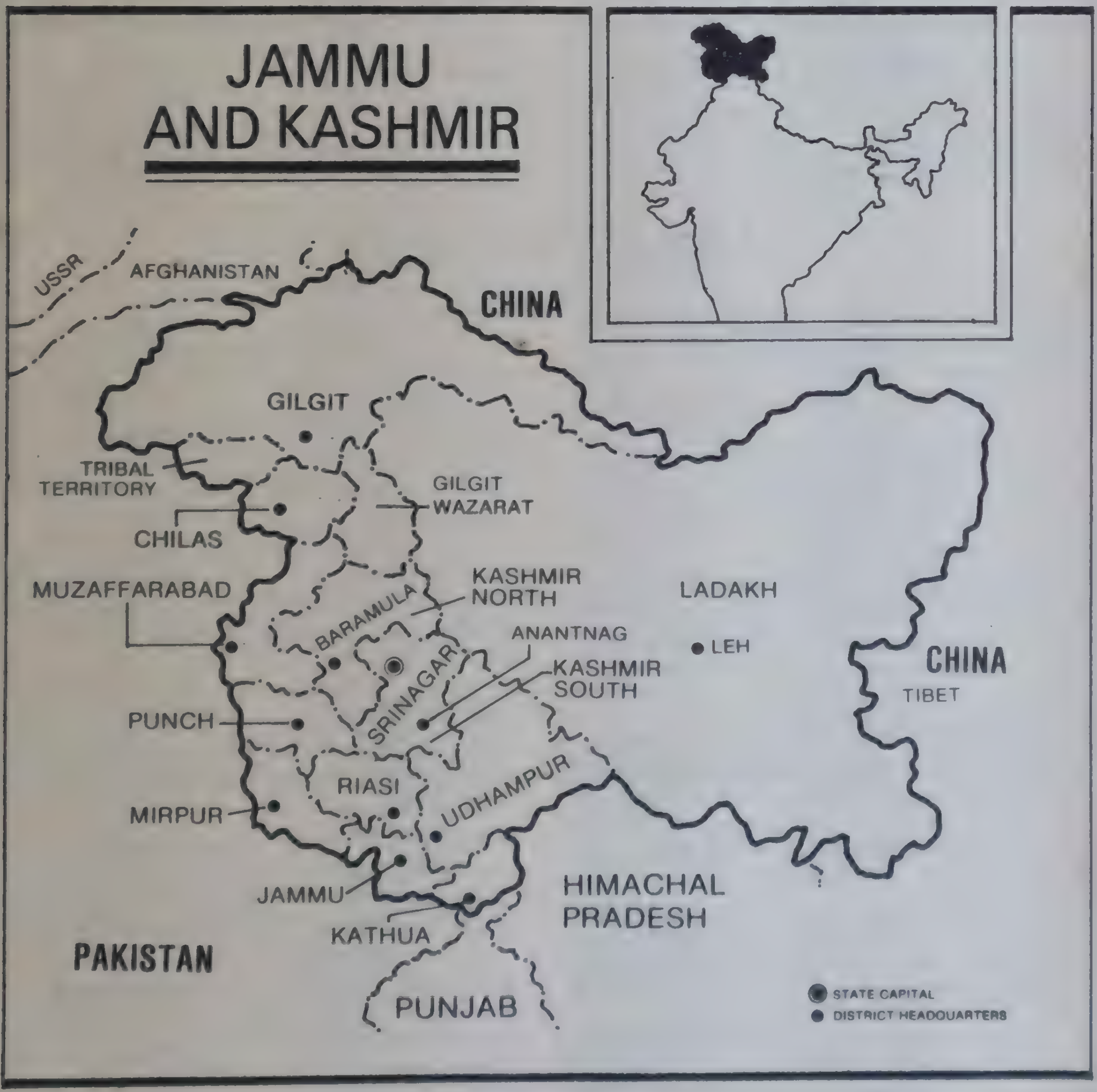
* Includes 37,555 sq. km. under illegal occupation of China.

State of Economy. Agriculture is the mainstay of the State economy, as about 80 per cent of the population depend on it. Paddy, wheat and maize are the major crops.


JAMMU
AND KASHMIR
USSR
AFGHANISTAN
CHINA
GILGIT
TRIBAL TERRITORY
GILGIT WAZARAT
CHILAS
MUZAFFARABAD
KASHMIR NORTH
BARAMULA
LADAKH
ANANTNAG
LEH
SRINAGAR
KASHMIR SOUTH
CHINA
TIBET
PUNCH
RIASI
UDHAMPUR
MIRPUR
JAMMU
HIMACHAL PRADESH
KATHUA
PAKISTAN
PUNJAB
STATE CAPITAL
DISTRICT HEADQUARTERS

Barley, bajra and jowar are cultivated in some parts. Gram is grown in Ladakh.

Area targetted to be covered under high-yielding varieties in 1986-87 is 2.60 lakh hectares under paddy, 2 lakh hectares under wheat, and about 80,000 hectares under maize. Area under high yielding varieties during 1986 is targetted at 5.46 lakh hectares. Food grains production is expected to reach 14.43 lakh tonnes in1986-87 from 12.46 lakh tonnes in 1984-85.

In the small scale sector the number of industrial units registered had crossed the 14921 mark providing employment to about 69,000 people upto end of March 1984.

The State Government accords high priority to the development of handicrafts and handlooms sectors. Kashmir handicrafts have always been a byword for excellence. The tradition of crafting papier mache, wood carving, carpet, shawls, etc. is very old in Kashmir. This sector provides employment to about 1.7 lakh people. Kashmir handicrafts particularly carpets earn substantial foreign exchange for the country. In 1985-86 Kashmir handicrafts worth Rs. 40.00 crore were exported.

Tourist Centres. Kashmir is the paradise for tourists, both international and domestic. Main centres of attraction are Srinagar, Pahalgam, Gulmarg, Sonamarg, etc. Among places of pilgrim interest are Amarnath, Vaishno Devi.

The tourist industry in the state has registered a phenomenal growth during the past decades. During 1975-76, over Rs. 60 lakh were spent on this sector and in 1984-85 plan expenditure was about 550 lakh. In the Seventh Plan an outlay of Rs. 2250 lakh has been approved.

Governor: Jagmohan, **Chief Minister:** Farooq Abdulla (National Conference).

KARNATAKA

Area: 1,91,791 sq.km.; **Capital:** Bangalore; **Population:** 3,71,35,714; **Language:** Kannada; **Literacy:** 38.5%.

Karnataka is the eighth largest state in India both in area and population. It was formerly known as Mysore. On November 1, 1973 the name *Mysore* was changed to *Karnataka* under The Mysore State (Alteration of Name) Act 1973.

The change is much more than a change in nomenclature. It is the revival of a great image of the region which, under the name of Karnataka, had attained glorious heights in history.

Physiography. Karnataka is situated on the western edge of the Deccan plateau and has for its neighbours Maharashtra and Goa on the north, Andhra Pradesh on the east and T.Nadu and Kerala on the south. On the west, it opens out on the Arabian Sea.

Physiographically, the state can be divided into four regions: (1) The Coastal Region, (2) the Malnad, (3) the Northern plains and (4) the Southern plains.

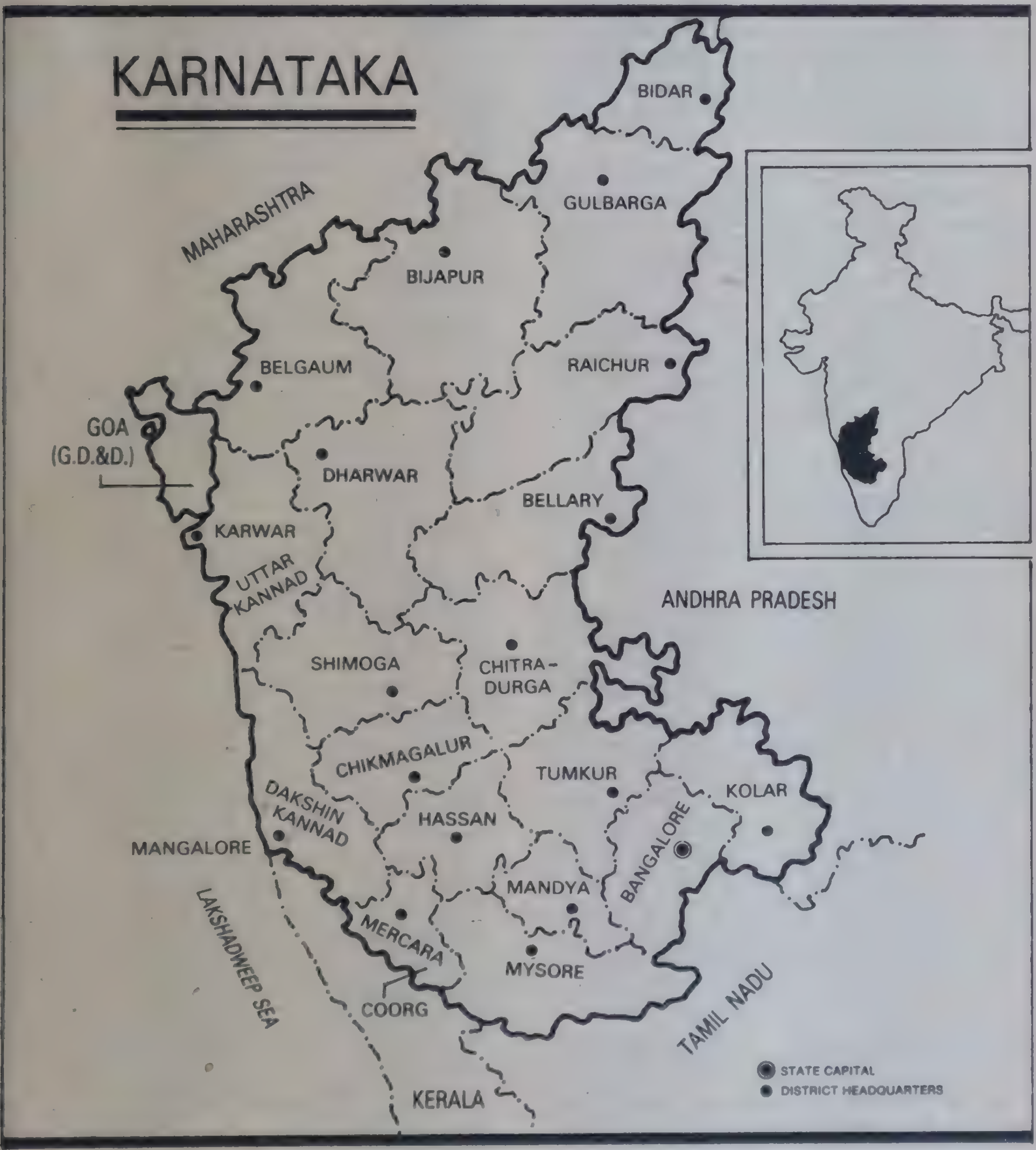
The two important river systems of Karnataka State are the Krishna and its tributaries (Bhima, Ghataprabha, Malaprabha, Tungabhadra and Vedavati) in the north, and the Kaveri and its tributaries (Hemavati, Shimsha, Arkavati, Lakshmana Thirtha and Kabini) in the south.

Both these rivers flow eastward and fall into the Bay of Bengal, the Krishna passing through Andhra Pradesh and the Kaveri traversing Tamil Nadu.

A number of smaller rivers flow westward into the Arabian Sea. Of these Sharavati, Kalinadi and Netravati are important to Karnataka. They are being tapped for hydro-power.

As most of these rivers pass through other States notably Andhra Pradesh, Kerala and T.Nadu, there are frequent disputes as to water rights between Karnataka and the other States.

History. The name Karnataka is derived from Karunadu, literally, lofty land. As much of Karnataka is high plateau land, the name is entirely justified. The history of Karnataka goes back to the dim days of the epics. The capital of Bali and Sugreeva, 'monkey kings' of the Ramayana, is said to have been Hampi in Bellary district. Vatapi, associated with the Sage Agastya, is obviously Badami in Bijapur district.


KARNATAKA
BIDAR
GULBARGA
MAHARASHTRA
BIJAPUR
BELGAUM
RAICHUR
GOA
(G.D.&D.)
DHARWAR
BELLARY
KARWAR
UTTAR KANNAD
ANDHRA PRADESH
SHIMOGA
CHITRA-DURGA
CHIKMAGALUR
TUMKUR
KOLAR
DAKSHIN KANNAD
HASSAN
BANGALORE
MANGALORE
MANDYA
LAKSHADWEEP SEA
MERCARA
MYSORE
COORG
TAMIL NADU
KERALA
STATE CAPITAL
DISTRICT HEADQUARTERS

In the 4th century B.C. Karnataka was part of the great Mauryan Empire. Siwamagiri (Kanakagiri in Raichur district) is said to have been the southern capital of the Mauryas. About 30 B.C. a local dynasty, Satavahana, came to power. The Satavahana Empire lasted nearly 300 years. With the disintegration of the Satavahana dynasy, the Kadambas came to power in the north, and the Gangas in the south. The gigantic monolithic statue of Gomateswara at Sravanabelagola is considered to be a monument of the Ganga period.

By the begining of the sixth century A.D., the Chalukyas established a new empire. After the Chalukyan empire, the Yadavas of Devagiri and the Hoysalas of Dwarasamudra divided Karnataka between them.

In the 14th century, the great Vijayanagar empire was established. It was an age of glory and prosperity. A confederation of the Muslim sultans of the Deccan destroyed the Vijayanagar Empire in 1565 (Battle of Talikota). The vast ruins at Hampi, near Hospet, remain to-day as sombre reminders of Vijayanagar glory.

In 1399 A.D. Yaduraya, the ruler of a small principality, Mysore, founded the Wodeyar dynasty. Raja Wodeyar (A.D. 1578—1612) enlarged the principality into a mighty kingdom, with Srirangapatanam as his capital. The Wodeyars were overthrown by Hyder Ali, the intrepid Muslim general of Mysore. With the defeat of Tippu, the son of Hyder Ali, by the British, the Wodeyars were restored to power as a feudatory of the British.

During British rule, the Karnataka area was distributed among the Princely States of Mysore, Hyderabad, and the British provinces of Bombay and Madras and the small principality of Coorg.

The formation of the present State represents the fulfilment of the age-old aspirations of Kannada-speaking people to come together in a single State. The old Kingdom of Mysore formed the nucleus of this new state. Under the States Reorganisation Act, the Kingdom of Mysore gathered around itself in 1956 the districts of Kanara, Bijapur, Dharwar and the major portion of Belgaum district in the Gulbarga, Raichur and Bidar districts, from the princely State of Hyderabad, the South Kanara district (excluding Kasargod Taluk and Kollegal taluk in Coimbatore district) from the old Madras Presidency and the whole of the 'Part C' State of Coorg.

Administration. The Legislature is made up of two houses, the Legislative Assembly of 224 members and the Legislative Council of 63 members.

The State is divided into 20 districts.

Districts

District	Area in (Sq.km)	Population	Head quarters
Bangalore	8005	4947610	Bangalore
Bangalore Rural	—	—	Bangalore
Balgaum	13415	2980440	Balgaum
Bellary	9885	1489225	Bellary
Bijapur	17069	2401782	Bijapur
Bidar	5448	995691	Bidar
Chickmagalur	7201	911769	Chickmagalur
Chitradurga	10852	1777499	Chitradurga
Dakshina Kannada	8441	2376724	Mangalore
Dharwad	13738	2945487	Dharwar
Gulbarga	16224	2080643	Gulbarga
Hassan	6814	1357014	Hassan
Kodagu	4102	461888	Madikeri
Kolar	8223	1905492	Kolar
Mandya	4961	1418109	Mandya
Mysore	11954	2595900	Mysore
Raichur	14017	1783822	Raichur
Shimoga	10553	1656731	Shimoga
Tumkur	10598	1977854	Tumkur
Uttara Kannada	10291	1072034	Karwar

State of Economy. Karnataka is predominantly rural and agrarian. About 76 per cent of its population lives in rural areas while about 71 per cent of its working force is engaged in agriculture and allied activities which generate 49 percent of the State income.

Among the food crops, Karnataka accounts for 47 per cent of the country's ragi production. The share of other crops in the country's production is: Jowar—16 per cent, small millets—10 per cent, tur—9 per cent, maize—7 per cent and rice and bajra—5 per cent each.

Among non-food crops, coffee is the most important as it accounts for 59 per cent of the country's coffee production. Other crops are: cardamom, arecanut, safflower, coconut, cotton, groundnut, chillies, castorseed, sugarcane and tobacco.

There are a number of big industries. Machine tools, aircraft, electronic products, watches and telecommunication equipment are some of the items produced. Important Union Government undertakings engaged in the production of these items are Hindustan Aeronautics, Hindustan Machine Tools, Bharat Earth Movers, Bharat Electronics, Indian Telephone Industries and National Aeronautical Laboratory. The State-owned Visvesvaraya Iron & Steel Ltd., Bhadravathi, produces special steel and alloy steel.

Kudremukh Iron Ore Project is another major development project. Karnataka accounts for 85 per cent of the raw silk produced in the country. Apart from silk, its sandal soap and sandal oil are well known in world markets.

Tourist Centres. Garden city of Bangalore has been adjudged the cleanest city in India more than once. A trip for

Bangalore via Srirangapatnam, the capital of Tippu Sultan, to Mysore, the capital of Wodeyars is most rewarding.

Mysore city is famous for the Dussehra festival during September-October. The famous Krishnaraja Sagar dam and Vrindavan gardens are nearby.

Among the natural parks is Bandipur Wild life Sanctuary, 80 km south of Mysore. Belur, on the bank of river Yagachi, was once the flourishing capital of Hoysala Empire. Sravanabelagola where the 18-metre statue of Gomateswara stands is a Jain pilgrim centre.

Governor: Ashok Nath Banerjee. **Chief Minister:** Rama Krishna Hegde. (Janata).

KERALA

Area: 38,863 sq. km.; **Capital:** Trivandrum; **Population:** 25,453,680; **Language:** Malayalam; **Literacy:** 69.17%.

Kerala is a small state, tucked away in the south west corner of India. It has an area of 38,863 sq. km. which represents only 1.18 per cent of the total area of India. But it supports a population of 25,453,680 which is 3.71 per cent of the total population of the country (1981). The disproportion between its area and population is reflected in the density—which in 1981 was 655 persons to the sq. km. This is the highest density among the States of the Union, higher densities being registered only by four Union Territories—Delhi-4178, Chandigarh-3948, Laccadive, Minicoy and Amindivi Islands, (now Lakshadweep)-1257 and Pondicherry-1228.

Physiography. Kerala may be divided into three geographical regions: (1) Highlands, (2) Midlands and (3) Lowlands. The Highlands slope down from the Western Ghats which rise to an average height of 3000 feet, with a number of peaks well over 6000 feet in height. This is the area of major plantations like tea, coffee, rubber, cardamom and other spices.

The Midlands, lying between the mountains and the Lowlands, is made up of undulating hills and valleys. This is an area of intensive cultivation. coconuts, arecanuts, tapioca, bananas, rice, ginger, pepper, sugar-cane and vegetables of different varieties are grown in this area.

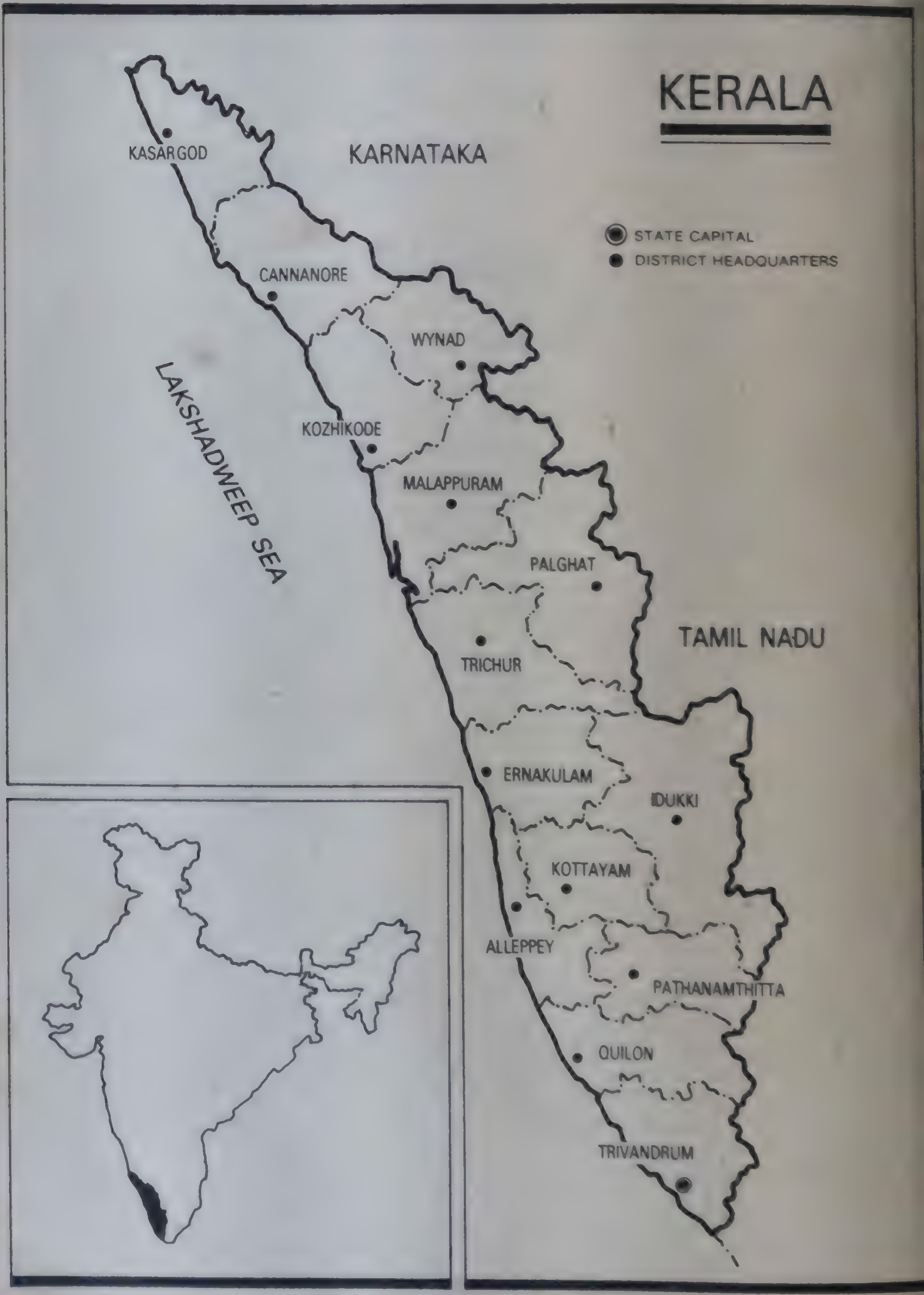
The Lowlands or the coastal area, which is made up of the river deltas, backwaters and the shore of the Arabian sea, is essentially a land of coconuts and rice. Fisheries and coir industry constitute the major industries of this area.

Kerala is a land of rivers and backwaters. Forty-four rivers (41 west-flowing and 3 east-flowing) cut across Kerala with their innumerable tributaries and branches, but these rivers are comparatively small and being entirely monsoon-fed, practically turn into rivulets in summer, especially in the upper areas.

The backwaters form a specially attractive and economically valuable feature of Kerala. They include lakes and ocean inlets which stretch irregularly along the coast. The biggest backwater is the Vembanad lake, some 80 sq. miles in area, which opens out into the Arabian Sea at Cochin port. The Periyar, Pamba, Manimala, Achenkovil, Meenachil and Moovattupuzha rivers drain into this lake. The other important backwaters are Veli, Katinamkulam Anjengo, Edava, Nadayara, Paravoor, Ashtamudi (Quilon), Kayamkulam, Kodungallore (Cranganore) and Chetuva. The deltas of the rivers interlink the backwaters and provide excellent water communications in the low-lands of Kerala. A navigable canal, 228 miles long, stretches from Trivandrum, the capital of Kerala, to Tirur in the far north.

History. When India became free, Kerala was made up of two princely States, Travancore and Cochin, and Malabar which was under the direct administration of the British. One of the first steps taken by independent India was to amalgamate small states together so as to make them viable administrative units.

In pursuance of this policy the Travancore and Cochin States were integrated to form Travancore-Cochin State on Ist July, 1949 But Malabar remained as part of the Madras Province. Under the States Re-organisation


KERALA
STATE CAPITAL
DISTRICT HEADQUARTERS
KARNATAKA
TAMIL NADU
LAKSHADWEEP SEA
KASARGOD
CANNANORE
WYNAD
KOZHIKODE
MALAPPURAM
PALGHAT
TRICHUR
ERNAKULAM
IDUKKI
KOTTAYAM
ALLEPPEY
PATHANAMTHITTA
QUILON
TRIVANDRUM

Act of 1956, Travancore-Cochin State and alabar were united to form the State of erala on Ist November, 1956.

Some territorial adjustments had necesarily to be made on re-organisation. In this djustment, Kerala lost to Madras (now Tamil adu) the taluks of Thovala, Agasteeswaram, alkulam and Vilavancode in the far south nd Shencotta in the east, while it gained the alabar district and the Kasargod taluk of outh Kanara district in the north. The Laccadive, Minicoy and Amindivi islands lying off he coast of Malabar were detached from erala and declared as Union Territory.

Administration. The state has a uncameral legislature. The Legislative Assemly has 144 members.

The state is divided into 14 Districts.

Districts

istricts	Area	Population	Headquarters
rivandrum	2186.00	2,596,112	Trivandrum
uilon	2687.50	2,192,901	Quilon
lleppey	1360.58	1,865,580	Alleppey
Pathanamthitta	2518.98	1,107,858	Pathanamthitta
Kottayam	2195.50	1,697,442	Kottayam
Idukki	5149.62	969,232	Painav
Ernakulam	2358.19	2,535,294	Ernakulam
Trichur	2993.90	2,439,543	Trichur
Palaghat	4389.80	2,044,399	Palaghat
Malappuram	3632.30	2,402,701	Malappuram
Kozhikodu	2333.30	2,245,265	Kozhikodu
Waynad	2125.60	554,026	Waynad
Cannanore	2968.00	1,930,223	Cannanore
Kasargodu	1961.30	872,741	Kasargodu
Total	38860.57	25,453,680	

Source: Dept. of Economics and Statistics, Govt. of Kerala.

State of the Economy. Kerala with its high population presents complex problems in the sphere of food, employment and housing. The State is 50 per cent short of food. Owing to historical and climatic reasons the State has developed commercial agriculture more than food crops. Consequently, the State is short of foodgrains, especially rice which is the staple food of the people.

Kerala has a unique cropping pattern. It accounts for 92 per cent of India's rubber, 70

Kerala: Highest and Lowest

Kerala claims the highest literacy rate, the highest sex ratio and the second lowest growth rate of population among the States in the country.

According to the final population figures of 1981 Census, Kerala's population is 2.54 crore, consisting of 1.25 crore males and 1.29 crore females. The decadal growth rate is 19.24 per cent, compared to 26.29 per cent in 1961-71. Tamil Nadu with 17.50 per cent claims the lowest growth rate in the country, while Nagaland has as high a rate as 50.05 and Assam 36.05.

Comparative figures of Kerala in the census since the formation of Kerala State

	1961	*1971*	*1981*
Population Total:	*16,903,715*	*21,347,375*	*25,453,680*
Males:	*8,361,927*	*10,587,851*	*12,527,767*
Females:	*8,541,788*	*10,759,524*	*12,925,913*
Decadal population growth rate.	*24.76*	*26.29*	*19.24*
	(1951-61)	*(1961-71)*	*(1971-81)*
Density of population (persons per sq. km):	*435*	*549*	*655*
Sex ratio (females per 1000 males):	*1022*	*1016*	*1032*
Literacy rate Total:	*56.85*	*60.42*	*70.42*
Males:	*54.97*	*66.62*	*75.26*
Females	*38.90*	*54.31*	*65.73*

Kerala's Seesaw Politics

Nov. 1, 1956: Birth of Kerala.
Mar, 1957: First Assembly Election.
April 5, 1957: E.M.S. ministry (Communist) sworn in.
July 31, 1959: E.M.S. ministry dismissed.
Feb. 1960, Election to the Assembly.
Feb. 22, 1960: Pattom Thanu Pillai ministry sworn in (Congress).
Sept. 25, 1962: (Pattom appointed Governor of Punjab.
Sept. 26, 1962: R. Sankar ministry sworn in (Congress).
Sept. 10, 1964: Sankar ministry goes.
Mar. 1965: Assembly election (infructuous).
Feb. 1967: Election to the Assembly.
March 6, 1967: Second E.M.S. ministry sworn in (Communist).
Oct. 24, 1969: E.M.S. ministry goes.
Nov. 1, 1969: Achutha Menon ministry in (Left United Front).
June 26, 1970: Assembly dissolved.
Aug. 1, 1970: Achutha Menon ministry resigns.
Sept. 1970: Assembly Election.
Oct. 4, 1970: Second Achutha Menon ministry in.
Mar. 1977: Election to the Assembly.
Mar. 25, 1977: Karunakaran ministry sworn in (Congress).
April 25, 1977: Karunakaran resigns.
April 27, 1977: A. K. Antony sworn in Chief Minister (Congress).
Oct. 27, 1978: Antony resigns.
Oct. 29, 1978: P. K. Vasudevan Nair ministry sworn in (Left United Front).
Oct. 7, 1979: Vasudevan Nair goes.
Oct. 11, 1979: C. H. Mohammed Koya ministry sworn in (Right United Front).
Dec. 1, 1979: Mohammed Koya goes.
Jan. 1980: Election to the Assembly.
Jan. 25, 1980: E. K. Nayanar ministry sworn in (Left United Front).
Oct. 20, 1981: Nayanar ministry goes.
Dec. 28, 1981: Karunakaran ministry sworn in (United Democratic Front).
Mar. 17, 1982: Karunakaran ministry resigns.
May 19, 1982: Assembly Election.
May 24, 1982: Karunakaran ministry sworn in (United Democratic Front).

per cent of cardamom, 70 per cent of coconut, 60 per cent of arecanut, 70 per cent of pepper, 80 per cent of tapioca and almost 100 per cent of lemon grass oil. Kerala is the single largest producer of a lot of other crops like bananas and ginger, besides tea and coffee in abundance.

While the State's economy continued to suffer from the adverse effect of the unprecedented drought of 1982 unprecedented rains and floods played havoc with her economy in 1985-86 also. Both production and productivity of almost all the major crops in the State suffered as a result of natural disurbances, the crops most affected being coconut, cardamom, pepper and coffee.

However, agricultural production went up sharply in 1983-84 and continued to increase modestly in 1985-86.

Rubber: Production increased from 162212 tonnes in 1983-84 to 172092 tonnes in 1984-85. Area of cultivation is 310,200 hectares. This is 88.63 per cent of India's total of 35,000 hectares.

Coffee: Coffee plantations in Kerala were devastated by the drought compared to coffee plantations elsewhere in the country where the effects of drought were less severe. In 1984-85 coffee was grown in 64009 hectares. This is 27.55% of total area of coffee cultivation in the country. In 30 years coffee production in the state increased more than seven times. Coffee export from the state in 1984-85: 27783 ton (Rs. 84.56 crore).

Tea. Despite the severe drought and power cut tea production in Kerala improved. In 1984-85 tea was grown in 35021 hectares (8.84% of India's total). Total production in 1985 was 48387 tons (7.7% of India's total).

Cardamom. The production and yield of cardamom were severely affected by the prolonged drought. But in 1984-85 production rose to 2850 tons from 1100 tons in 1983-84. Total export earning in 1984-85: Rs. 59.05 crore (91% of India's total).

In the industrial sector, the power cut imposed consequent to drought, continued to affect activities during the last few years. Total Industrial production during 1984-85 was to the tune of Rs. 828.57 crore. There were 10656 registered factories in the state, total work force in these factories was 287713.

Tourist Centres. Under the aegis of the Department of Tourism and Kerala Tourism Development Corporation, many places in Kerala have been developed into tourist centres.

Trivandrum, the capital city had been once the cleanest city in India. It is an abode of temples, mosques and churches. Kovalam Beach Resort is 12 km from there. Neyyar Dam (19 km), Ponmudi (61 km) and Padmanabhapuram Palace (53 km) are other places of interest.

Periyar Wild Sanctuary at Thekkady in Idukki District is another attraction. Sabarimala, abode of Lord Ayyappan, is a famous pilgrim centre in Pathanamthitta Dist.

Cochin is one of the most beautiful places and grand sea-scape. Kalady in Ernakulam District is the birthplace of Sri Sankaracharya. Guruvayur in Trichur Dist. has the famous Lord Krishna shrine. Kalamandalam, the renowned Kathakali Centre is in Trichur Dist. Calicut is historically important as the capital of the Zamorins

Governor: P. Ramachandran. **Chief Minister:** K. Karunakaran (Congress).

MADHYA PRADESH

Area: 443446 Sq. Km.; **Capital:** Bhopal; **Population:** 5,21,78,844; **Language:** Hindi; **Literary:** 27.82%

Situated in the Centre of India and bounded on all sides by other Indian States, Madhya Pradesh (Central Province) is entirely justified in is name. It is the biggest State in India and was created on November 1, 1956 out of the former states, then known as Madhya Bharat, Vindhya Pradesh and Bhopal and 14 Mahakoshal districts of the old Central Province under the British.

Physiography: Except for the valleys of the Narmada and the Tapti, M.P. consists of a plateau with a mean elevation of 1600 ft. above sea level, interspersed with the mountains of the Vindhya and the Satpura ranges. The main river systems are the Chambal, Betwa, Sindh, Narmada, Tapti, Mahanadi and Indravati.

The average rainfall in the different regions of the State ranges from 30 to 60 inches. The climate is extreme in the north, temperate and breezy in the plateau and generally hot and humid in the eastern and southern plains. Nearly a third of the State's area is covered with tropical forests.

M.P. has the largest population of Scheduled Tribes of all States and a high proportion of Scheduled Castes. Together, they constitute nearly one-third of the population, 23 districts are predominantly tribal. The major tribes of MP are Cronds, Bhils, Oraons Korkens and Kols. Massive development efforts under tribal sub-plan are going on in these areas. The tribals in the districts mainly depend on the progress of this area.

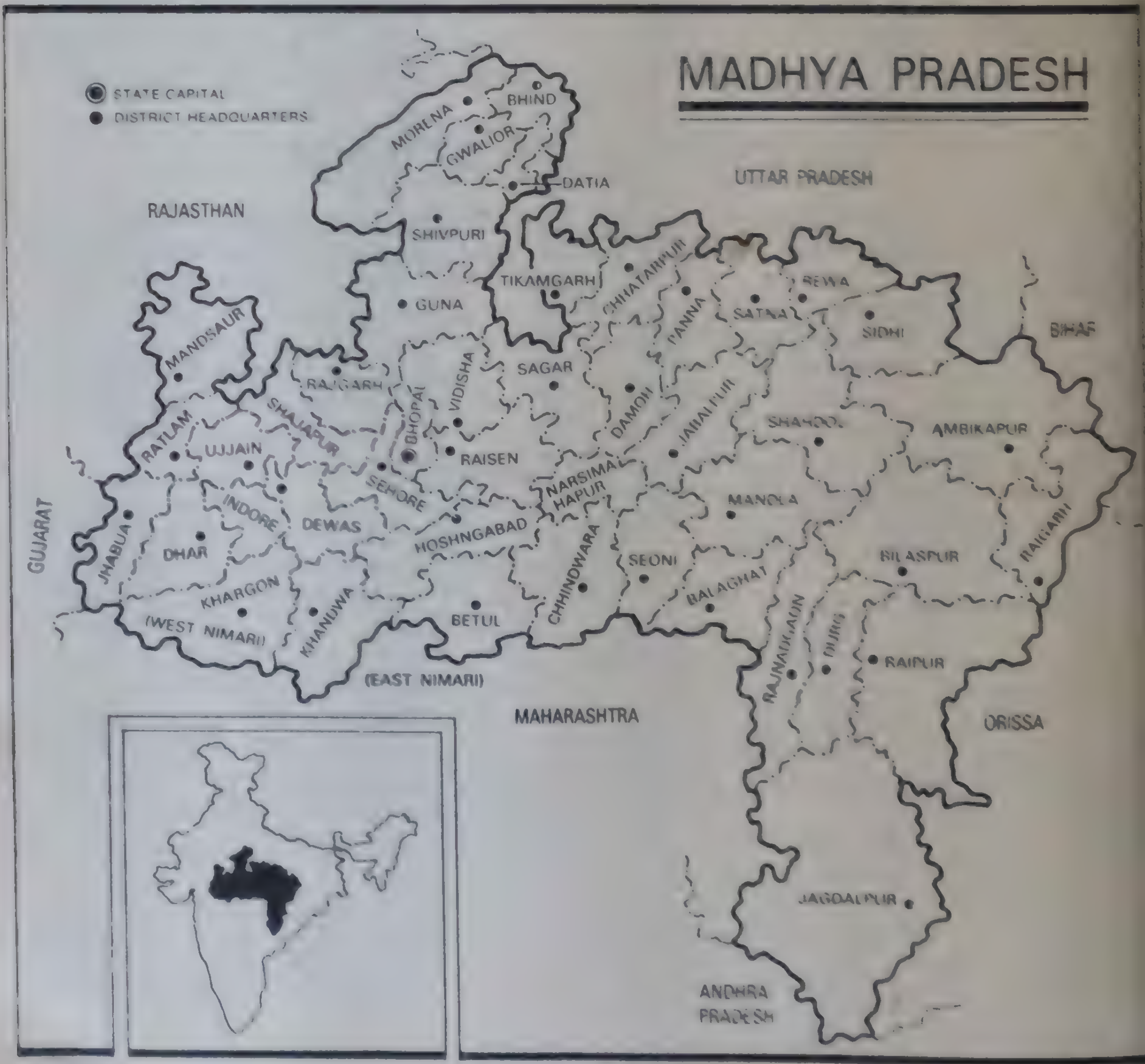
History. Under the provisions of the States Reorganisation Act, 1956, the State of Madhya Pradesh was formed on November 1, 1956. It consists of the 17 Hindi districts of the previous state of that name, the former State of Madhya Bharat (except the Sunel enclave of Mandsaur district), the former Vindhya Pradesh and the State of Bhopal and Sironj subdivision of Kotah district, which was an enclave of Rajasthan in Madhya Pradesh.

Administration. The Legislature is unicameral with one house—the Legislative Assembly. The State is divided into 45 districts.

Districts

District	Area (sq. km)	Population (1981 census)	Headquarters
Balaghat	9229	1147810	Balaghat
Bastar	39114	1842854	Jagdalpur

Betul	10043	925387	Betul
Bhind	4459	973816	Bhind
Bhopal	2772	894739	Bhopal
Bilaspur	19897	2953366	Bilaspur
Chhatarpur	8687	886660	Chhatarpur
Chhindwara	11815	1233131	Chhindwara
Damoh	7306	721453	Damoh
Datia	2038	311893	Datia
Dewas	7020	795309	Dewas
Dhar	8153	1057469	Dhar
Durg	8537	1890467	Durg
East Nimar	10779	1153580	Khandwa
Guna	11065	1001985	Guna
Gwalior	5214	1107879	Gwalior
Indore	3898	1409473	Indore
Hoshangabad	10037	1003939	Hoshangabad
Jabalpur	10160	2198743	Jabalpur
Jhabua	6782	795168	Jhabua
Mandla	12269	1037394	Mandla
Mandsaur	9791	1263399	Mandsaur
Morena	11594	1303213	Morena
Narsinghpur	5133	650445	Narsinghpur
Panna	7135	539978	Panna
Raigarh	12924	1443197	Raigarh
Raipur	21258	3079476	Raipur
Raisen	8466	710542	Raisen
Rajgarh	6154	801384	Rajgarh
Rajnandgaon	11127	1167601	Rajnandgaon
Ratlam	4861	782729	Ratlam
Rewa	6134	1207583	Rewa
Sagar	10252	1323132	Sagar
Satna	7502	1153387	Satna
Sehore	6578	657381	Sehore
Seoni	8758	809713	Seoni
Shahdol	14028	1345125	Shahdol
Shajapur	6196	840247	Shajapur
Shivpuri	10278	865930	Shivpuri
Sidhi	10226	990467	Sidhi


MADHYA PRADESH
STATE CAPITAL
DISTRICT HEADQUARTERS
RAJASTHAN
UTTAR PRADESH
GUJARAT
MAHARASHTRA
BIHAR
ORISSA
ANDHRA PRADESH
MORENA
BHIND
GWALIOR
DATIA
SHIVPURI
GUNA
TIKAMGARH
CHHATARPUR
PANNA
SATNA
REWA
SIDHI
MANDSAUR
RAJGARH
BHOPAL
VIDISHA
SAGAR
DAMOH
JABALPUR
SHAHDOL
AMBIKAPUR
RATLAM
UJJAIN
SHAJAPUR
SEHORE
RAISEN
NARSIMAHAPUR
MANDLA
JHABUA
DHAR
INDORE
DEWAS
HOSHNGABAD
CHHINDWARA
SEONI
BALAGHAT
BILASPUR
RAIGARH
KHARGON
(WEST NIMAR)
KHANDWA
BETUL
(EAST NIMAR)
RAJNANDGAON
DURG
RAIPUR
JAGDALPUR

Surguja	22337	1633476	Ambikapur
Tikamgarh	5048	736361	Tikamgarh
Ujjain	6091	1117002	Ujjain
Vidisha	7371	783098	Vidisha
West Nimar	13450	1630943	Khargone

State of Economy: The economy of Madhya Pradesh is primarily agriculture-based. Nearly 80 per cent of the population live in villages. Over 43.5 per cent of the land area is cultivable, of which 14.4 per cent is under irrigation. The Malwa region abounds in rich black cotton soil, the low lying areas of Gwalior, Bundelkhand, Baghelkhand and the Chhattisgarh plains have lighter soil, whereas the Narmada valley is formed of deep rich alluvial deposits. The main food crops are jowar, wheat and rice and coarse grains such as kodo, kutki, soma, etc. Important among the commercial crops are oilseeds, cotton and sugarcane. The state is poised for a breakthrough in soyabean cultivation.

M.P. is very rich in natural resources like iron ore, manganese ore, coal, lime stone and tin. The major industries are the steel plant at Bhilai, Bharat Heavy Electricals at Bhopal, the Aluminium Plant at Korba, the Security Paper Mills at Hoshangabad, the Bank Note Press at Dewas, the Newsprint Mill at Nepanagar and Alkaloid Factory at Neemuch, Cement Factories, Vehicle Factory, Ordnance factory and Guncarriage Factory. There are also 23 textiles mills, 7 of them nationalized.

The Bhilai Steel Plant near Durg is one of the six major steel mills in India. A power station at Korba (Bilaspur) with a capacity of 420 MW serves Bhilai, the Aluminium Plant and the Korba Coalfields.

The Bharat Heavy Electricals was set up by the Government of India at Bhopal during the Second Plan period. This is India's first heavy electrical equipment factory and also one of the largest of its type in Asia. It makes a variety of highly complicated equipment required for generation, transmission, distribution and utilization of electric power.

A large number of agro-based industries have also come up. Large number of solvant extraction plant based on soyabean have been established. Fourteen Industrial Growth Centres are being developed in the state.

Tourist Centres: Khajuraho once the capital of Chandella rulers is 595 km from Delhi. The embodiment of the great artistic activity of the 9th to the 12th centuries, only 22 temples out of 85 survive.

Ujjain with historic palaces, Sanchi with ancient Buddhist monuments, Bhopal the lake-side capital city, Jabalpur famous for marble rocks and Gwalior with beautiful forts are among the other tourist centres.

Kanha National Park near Jabalpur is one of the most beautiful wild life sanctuaries in India.

Governor: K.M. Chandy, **Chief Minister**: Motilal Vohra.

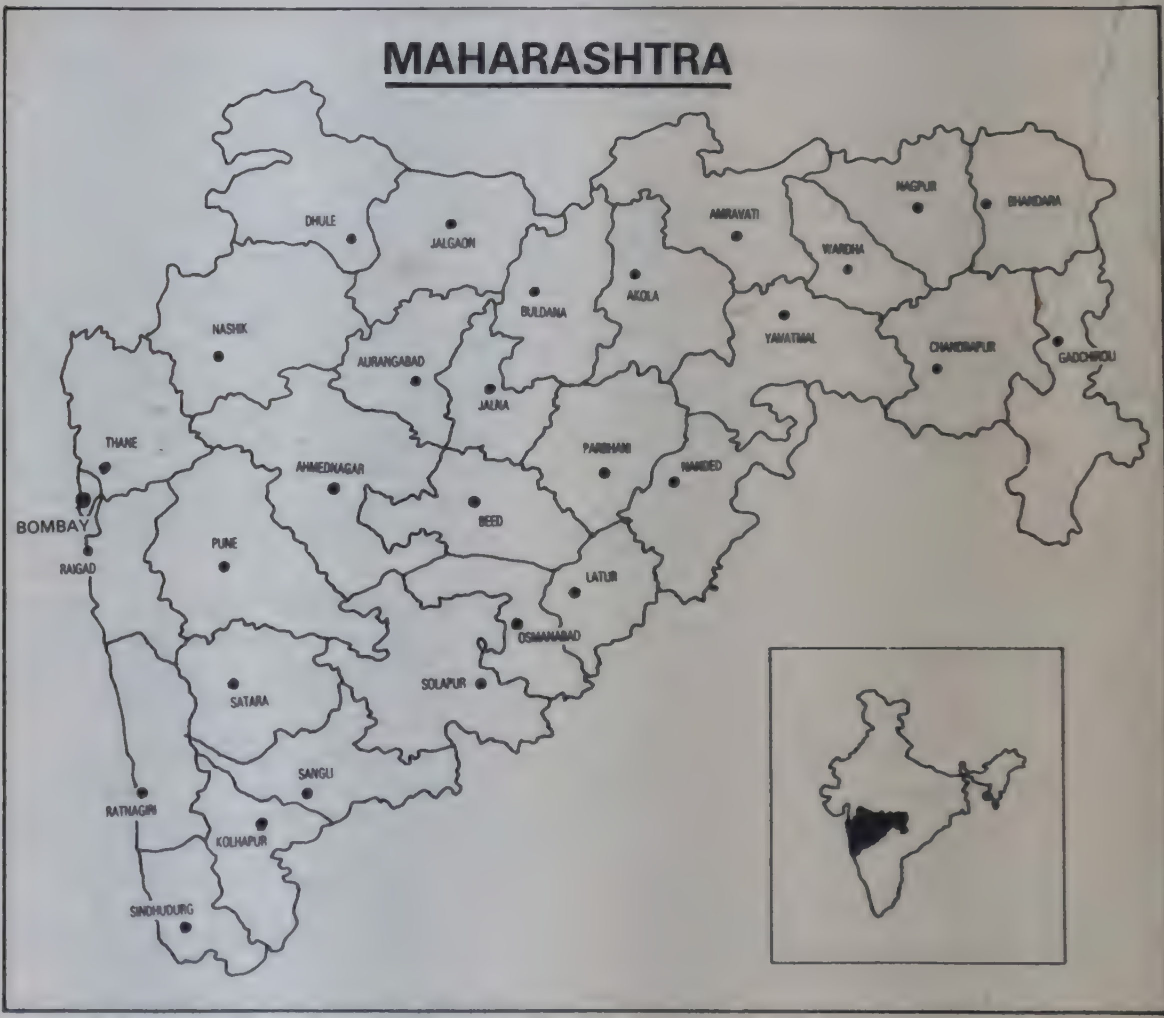
MAHARASHTRA

Area: 3,07,690 sq.km. **Capital**: Bombay; **Population**: 6,27,84,171; **Language**: Marathi, **Literacy**: 47.37%

Maharashtra is the third largest state in India both in area and population. Only Uttar Pradesh and Bihar have larger populations and Madhya Pradesh and Rajasthan have larger areas than Maharashtra. The state is bounded by the Arabian Sea in the west, Gujarat in the north west, MP in the north, AP in the south east and Karnataka and Goa in the south.

Physiography. The State of Maharashtra forms a huge irregular triangle with its base on the west coast of India overlooking the Arabian Sea. The coastal strip, about 720 km long and not more than 80 km wide, is the Konkan, dotted with paddy fields and coconut gardens. The Sahyadris or the Western Ghats running almost parallel to the sea coast flank the Konkan on its east. To the east of the Sahyadris stretches a vast plateau forming the apex of the triangle.

This plateau is drained by the great rivers Godavari, Bhima and Krishna, which rise in the Sahyadris and flow eastward across the Indian peninsula into the Bay of Bengal. The plateau is extremely fertile and provides excellent crops of cotton, oil seeds and sugarcane. The rainfall in the state varies considerably, the areas west of the Sahyadris


MAHARASHTRA
DHULE
JALGAON
AMRAVATI
NAGPUR
BHANDARA
WARDHA
AKOLA
BULDANA
NASHIK
AURANGABAD
JALNA
YAVATMAL
CHANDRAPUR
GADCHIROLI
THANE
AHMEDNAGAR
PARBHANI
NANDED
BOMBAY
RAIGAD
BEED
PUNE
LATUR
OSMANABAD
SOLAPUR
SATARA
SANGLI
RATNAGIRI
KOLHAPUR
SINDHUDURG

like the districts of Thane, Raigad, Ratnagiri and Sindhudurg receive heavy rains with an annual average of 200 cm.

The areas which lie in the rain-shadow of the Sahyadris, however, comprise the major portion of the state area and get an average rainfall of around 60 to 75 cm annually and in some areas less than 50 cm. These areas include the districts of Nashik, Pune, Ahmednagar, Dhule, Jalagaon, Satara, Sangli, Solapur and parts of Kolhapur.

History. Historically, Maharashtra falls into three regions. Western Maharashtra, Vidarbha and Marathwada. Among these, Vidarbha has a hoary past and is mentioned many times in the Mahabharata. Maharashtra as a whole figures in history during the Mauryan period when it became part of the Mauryan Empire. After the fall of the Mauryas, Maharashtra was under the domination of a number of Hindu dynasties for nearly a thousand years. The Yadavas, the last of these dynasties, ended in 1294. Thereafter the state came under a succession of Muslim rulers.

With the rise of Shivaji, Maharashtra entered a new phase in history. Shivaji welded the Marathas into a powerful nation. They became rulers instead of subjects. The Peshwas who succeeded Shivaji built up a Maratha Empire which extended from Gwalior in the north to Tanjore in the south. The Maratha power received a setback at Panipat, in 1761, when the Afghan ruler Ahmed Shah Abdali routed the Maratha forces. They recovered only to confront the British power and to be decisively defeated in 1818. After the defeat of 1818 Maharashtra settled down as part of the Bombay Presidency under the

British administration.

In independent India, Bombay continued as one state consisting of Maharashtra and Gujarat. This was an experiment in bilingualism–that is, one state comprising two linguistic units. The experiment did not work. Under the Bombay Re-organisation Act, 1960 Maharashtra and Gujarat were formed into separate States on May 1, 1960 Maharashtra retaining the old capital Bombay.

Administration. Legislature: The state has a bicameral legislature–the Legislative Assembly (Vidhan Sabha) and the Legislative Council (Vidhan Parishad). The state is divided into the following districts:

Districts

District	Population 1981	Area (in sq.km.)	Headquarters
Greater Bombay	8243405	603	Bombay
Thane	3351562	9558	Thane
Raigad	1486452	7148	Alibag
Ratnagiri†	1379655	8249	Ratnagiri
Sindhudurg	772555	5219	Kudal*
Nashik	2991739	15530	Nashik
Dhule	2050294	13150	Dhule
Jalgaon	2618274	11765	Jalgaon
Ahmednagar	2708309	17048	Ahmednagar
Pune	4164470	15642	Pune
Satara	2038677	10484	Satara
Sangli	1831212	8572	Sangli
Solapur	2610144	14874	Solapur
Kolhapur	2506330	7633	Kolhapur
Aurangabad‡	1588031	9172	Aurangabad
Jalna*	1032157	8656	Jalna
Parbhani	1829378	11038	Parbhani
Bid	1486030	10624	Bid
Nanded	1749334	10502	Nanded
Osmanabad+	1029712	7510	Osmanabad
Latur*	1293442	7304	Latur
Buldana	1508777	9661	Buldana
Akola	1826952	10575	Akola
Amaravati	1861410	12212	Amaravati
Yavatmal	1737423	13584	Yavatmal
Wardha	926618	6310	Wardha
Nagpur	2588811	9931	Nagpur
Bhandara	1837577	9213	Bahandara
Chandrapur**	1418306	10490	Chandrapur
Gandachiroli§	637336	15433	Gadchiroli

* Provisional

† Reorganised as Ratnagiri and Sindhudurg district with effect from 1st May 1981.

‡ Reorganised as Aurangabad and Jalna districts with effect from 1st May 1981.

+ Reorganised as Osmanabad and Latur districts with effect from 16th August 1982.

** Reorganised as Chandrapur and Gandachiroli districts with effect from 26th August 1982.

§ Gandachiroli from 1st May 1983 onwards.

State of Economy. About 70 per cent of the people in Maharashtra depend on agriculture. About 12.22 per cent of the total cultivated area is irrigated. The principal food crops are wheat, rice, jowar, bajra and pulses. Important cash crops are cotton, sugarcane, groundnut and tobacco. The production of foodgrains in 1983-84 created a record of 109.5 lakh tonnes as compared to 92.16 lakh tonnes in 1982-83.

Although the state accounts for 9.4 per cent of the total population of the country, it shares about 12 per cent of industrial units, over 20 per cent of labour, about 16 per cent of investment and 25 per cent of the value of industrial output.

The industry groups contributing substantially to Maharashtra's industrial production are chemicals and chemical products, textiles, electrical and non-electrical machinery and petroleum and allied products among food products sugar is the most important. Other important industries are pharmaceuticals, engineering goods, machine tools, steel and iron castings and plasticware. It also leads in sophisticated electronics equipment. Santa Cruz Electronics Export Processing Zone (SEEPZ), is a free trade zone for cent per cent export of

Tourist Centres. Some of the important tourist centres are Caves–Ajanta, Ellora, Elephanta, Kanheri, Karala; Hill stations–Mahabaleshwar, Matheran and Panchagani; Religious Places: Pandharpur, Nashik, Shirdi, Aundhanagnath, Nanded and Ganapatipule. **Governor:** S.D. Sharma. **Chief Minister:** S.B. Chavan (Congress)

MANIPUR

Area: 22,327 Sq. km; **Capital:** Imphal; **Population:** 14,20,953; **Languages:** Manipuri & English; **Literacy:** 41.35%.

Manipur has been a Union Territory from 1956 and a full-fledged state from 1972.

Manipur is bounded by Nagaland in the

north, Mizoram in the south, Upper Burma in the east and Cachar district of Assam in the west.

History. Manipur has a varied and proud history from the earliest times. It came under British Rule as a princely State in 1891. The Manipur Constitution Act, 1947, established a democratic form of Government with the Maharajah as the Executive Head and a legislature constituted by election an adult franchise. The Legislative Assembly so constituted functioned till it was dissolved on the integration of the erstwhile State with the Domininian of India in October, 1949.

Then it was governed as if it were a Chief Commissioner's Province and then as a Port 'C' State under the Indian Constitution with effect from 26-1-1950. In 1950-51 an Advisory form of popular Government was introduced and in 1957 this was replaced by a Territorial Council of 30 elected and 2 nominated members. Seen thereafter in 1963, a legislative Assembly of 30 elected and 3 nominated members was established.

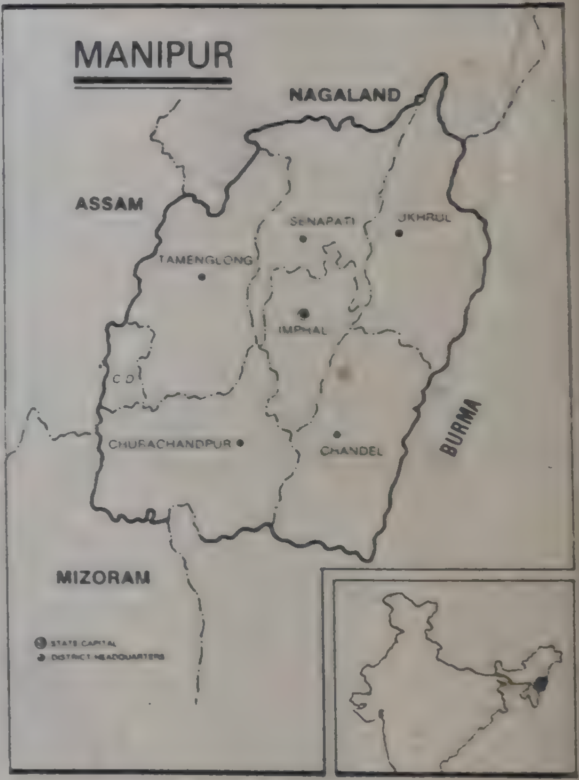
The status of the Administrator was raised from that of a Chief Commissioner to that of a Lieutenant Governor in December, 1969. Manipur achieved full Statehood on January 21, 1972.

Administration. Manipur was reorganised into eight districts on 25-5-83. The district headquarters been the same name.

Districts

Imphal	1,303	5,56,146
Bishnupur	530	1,41,150
Thoubal	405	2,31,781
Ukhrul	4,544	82,946
Senapati	3,271	1,55,421
Tamenglong	4,391	62,289
Churachandpur	4,570	1,34,776
Chandel	3,313	56,444

State of Economy: The main crop of the state is paddy. Maize is cultivated in the foot hills. Out of the area of 22,327 sq. km., the area available for cultivation is about 2.1 lakh hectares only. The area under paddy is 1.86 lakh hectares out of which 1.10 lakh hectares in the valley. About 70% of the valley area is brought under high yielding varieties of paddy.



Manipur is leading the north eastern states in per hectare yield of rice and maize. The average yield of rice per hectare is 1820 kg. Manipur is the highest consumer of fertilizer – 38 kg of nutrients per hectare – in the north eastern region.

More than 60% of the high yielding varieties of paddy area is brought under locally bred high yielding varieties of paddy like punshi, phouoibi and KD series.

Handloom is the biggest industry in Manipur. There are 2.5 lakh tonnes and at least 3 lakh persons are employed in the field.

The Manipur Spinning Mill, launched in 1974 has completed the first phase with 13,392 spindles.

The 60 TPD capacity Khandsari Sugar Factory at Wanghal has gone into production.

An electronics unit and TV assembly unit also have started production.

There are 3310 small scale industrial units with almost 19,300 workers in the state.

Sericulture: Manipur is the first to introduce Oak Tasar Industry. In the hill area there are 75 Tasar Farms 1500 Tribal families (or 1500 numbers) produce about 30 million Tasar cocoons valued Rs.3.00 millon. Apart from this over 100 Scheduled Caste milies in the valley practise Mulberry arming in traditional ways producing 45,000 of raw silk annually by reeling and nning utilising the same in its exquisite ndloom industry.

ourist Centres: The important tour- centres in the state are Imphal, the capital d centre of all cultural and commercial tivities adorned with two War Cemeteries intained by Commonwealth War Graves mmission, Govindajee Temple, Women zaar, etc. Besides, the Bishnu temple at nupur built in 1467 A.D., the Loktak lake the biggest fresh water lake in eastern India, Keibul Lamjao, the only floating national park in the world, the Orchid Kard at Khongampat etc. give unforgettable memory to the tourists.

Accommodation facilities at important centres such as Waichou, Kaina, Phubala, Sendra and Tourist Lodge at Imphal are remarkable. Transport facilites are provided with Deluxe, Mini Bus and Taxi services at moderate charges.

Governor: S.M.H. Burney; **Chief Minister**: Rishang Keishing (Congress).

MEGHALAYA

ea: 22,429 sq.km. **Capital**: Shillong, **opulation**: 13,35,819. **Languages**: Khasi, aro and English. **Literacy**: 34.08%.

Meghalaya, literally 'the abode of the ouds' (Megha-clouds, Alaya-abode), was ugurated as an autonomous unit on April 970. It was declared a State of the Indian nion of January 21, 1972.

hysiography. The exclusive tribal me of the Khasis, the Jaintias and the Garos a mountain region. Shillong, the capital of eghalaya, is situated in the centre of a high ateau. The highest peak in the state is the llong Peak 6965 m. in height. Nokrek in e Garo Hills district is the next highest ak.

A number of rivers, none of them navig- le drain this mountainous area. Krishnai mmang), Kalu (Jira), Bhugai (Bugi), Nitai areng) and Someswari (Simsang)* flow rough the Garo Hills District. Kynshi, Khri, trew, Umngot, Umiam Mawphlang and am Khwar, flow through Khasi Hills dis- ct, while Kupli, Myntdu & Myntang flow rough Jaintia Hills district. All these rivers th rocky beds and swift currents abound in taracts and waterfalls. The most picturese waterfall is the one at Mawsmai village lled Nohsngithiang near Cherrapunjee. ere the waters of several rivulets are ecipitated over a sheer cliff several hun- ed feet high.

The average annual rainfall of the state is 00-12700 millimeters. In the capital city of Shillong, rainfall averages 2032 millimetres per annum. The Cherrapunjee-Mawsynram belt in the southern slopes of Khasi Hills has the distinction of having the world's heaviest rainfall, with an average of 12,700 millimetres per annum.

Meghalaya, known as the Scotland of the East, is a country of surpassing scenic beauty. Waterfalls and mountains, lakes, rising peaks and billowing hills meadows, valleys and rushing rivers combine to make a rich panorama.

The Khasis, Jaintias and Garos are very ancient tribes, who had settled in these hills in remote past. They number about ten lakh.

Dance, music and sports reflect their way of life. Festive sounds of merry-making echo from hill to hill revealing the pulsating life of the tribal people. Mindful of their cultural heritage these simple folk are jovial and hospitable.

Administration. Meghalaya is a constituent state of the North Eastern Council. The State has a unicameral legislature. The Legislative Assembly consists of 60 members—29 from Khasi Hills, 7 from Jaintia Hills and 24 from Garo Hills.

The following table shows the district-wise area and population of the State according to the final figures of 1981 census.

Districts

District	Area (sq.km)	Population	Headquaters
East Khasi Hills	5196	511414	Shillong
West Khasi Hills	5247	161576	Nongstoin

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he names in brackets are tribal names.

East Garo Hills	2603	136550	Jowai
West Garo Hills	5564	369877	Tura
Jaintia Hills	3819	156402	Williamnagar
Total	22429	1335819	

Meghalaya, originally, comprised two districts and three subdivisions. In order to accelerate the pace of development and to bring the administration closer to the people, the state has now been re-organised into five districts, and ten sub-divisions. For an all round development of the rural areas, the whole state is now covered by 30 Community Development Blocks.

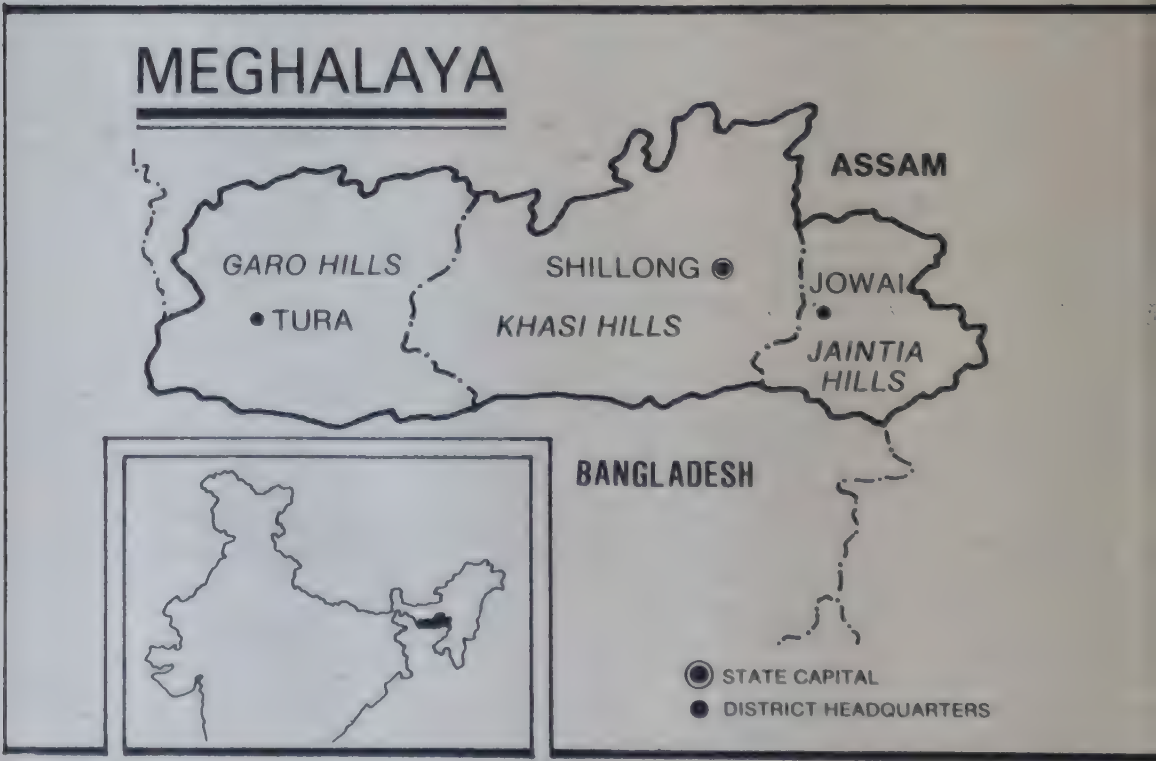
State of Economy. The majority of the people depend on land for their livelihood. But the potential for agricultural expansion is very limited in Meghalaya due to the terrain. Jhumming or shifting cultivation, practised in the state on a large scale, is one of the biggest problems to be tackled in Meghalaya. This traditional practice is deeply rooted among the hill people.

However, the state government has made a modest beginning with a scheme to help the farmers to settle on lands which are suitable for steady cultivation. The state's Soil Conservation Department's resettlement scheme called Jhum Control Scheme envisages allotment of improved land to villagers together with supply of fertilizers, seeds irrigation facilities, etc. The developed land would also be linked with roads for marketing the produce. At present, the villages i selected areas with a minimum of 50 familie are growing crops by modern methods.

The state is not so far industrially de veloped. However, new industrial units se up by or with the help of the Meghalay Industrial Development Corporation are fas coming up. Some of them are:

The Meghalaya Plywood Ltd., The Associ ated Beverages (P) Ltd., The Meghalay Essential Oils and Chemicals Ltd., Th Meghalaya Phyto-Chemicals Ltd. Th Komorah Limestone Mining Co. Ltd., Th Meghalaya Towers and Trusses Ltd. and th Umiam Calcenates Ltd.

The public sector cement factory at Cher rapunjee known as the Mawmluh-Cherr Cement Ltd., which is producing 250 tonne of cements daily, has been expanded to production capacity of 930 tonnes per day



ourist Centres. Meghalaya is a ream-come-ture' for the tourist. The charms f this land are many-splendoured and uniue. It is a happy land of magnificent beauty, ndulating hills, rolling grassland, cascading aterfalls, snaking rivers, terraced slopes nd thrilling wild life.

Some of the important tourist spots are: (1) niam Lake by the side of the Shillong-wahati road provides a most fascinating iew. Fishing is a great sport over here. (2) yllang Rock, about 55 kilometres west of hillong, is an interesting tourist spot. Rising ut of the rolling grassy downs, it is an imposing dome of granite more than 700 feet in height. (3) Nohsngithiang falls at Mawsmai near Cherrapunjee, overlooking the hazy blue plains of Bangladesh, has an appeal unparalleled in the whole of India. And the Mawsmai caves are full of wonders to the eyes. (4) Nartiang, about 90 kilometres from Shillong, has a number of monoliths, the tallest being 27 feet high and ½ foot thick erected by the villagers of Nartiang between 1500 and 1835 A.D.

Governor: Bhishma Narain Singh.
Chief Minister: Capt. Williamson Sangma (Congress).

MIZORAM

rea: 21081 sq.km; **Capital:** Aizawl; **Populaion:** 4,93,757; **Languages:** Mizo and Enlish; **Literacy:** 60%.

Mizoram, in the local language, means the nd of Mizos—Mizo itself means high-lander ni-persons and zo-hills or uplands). Under ne British administration, Mizoram was nown as Lushai Hills District. In 1954 by an ct of Parliament the name was changed to izo Hills District. In 1972, when it was made nto a Union Territory, it was named izoram.

hysiography. Mizoram occupies the orth east corner of India. It is bounded on ne north by the District of Cachar (Assam) nd the State of Manipur, on the east and outh by Chin Hills and Arakan (Burma), on ne west by the Chittagong hill tracts of angladesh and the State of Tripura.

Mizoram is a land of hills. The hills run in dges from north to south. They have an verage height of 900 metres, the highest oint being the Blue Mountain (Peak) in the outh which rises to a height of 2165 metres.

The most important and useful rivers are ne Tlawng (or the Dhaleswari), the Sonai nd the Tuivawl, which drain the northern rea of the Territory and eventually join the arak. The southern area is watered by the olodine and its tributaries and the western rea by the Karnaphuli with its tributaries. hittagong in Bangaldesh is situated at the outh of this river.

The valleys are unhealthy during the rainy eason, wet and enervating. In the higher areas, the climate is pleasant, generally cool in summer and not very cold in winter. In March-April voilent storms from the north west sweep over the hills. The average rainfall between May and September is 254 cm a year. Aizwal in the north records an annual rainfall of 208 cm while Lunglei in the south records 350 cm.

History. The Mizos belong to the Mongolian race. They seem to have settled at first in the Shan State of Burma. The tribes left Burma and moved westwards into India. They occupied the Lushai Hills.

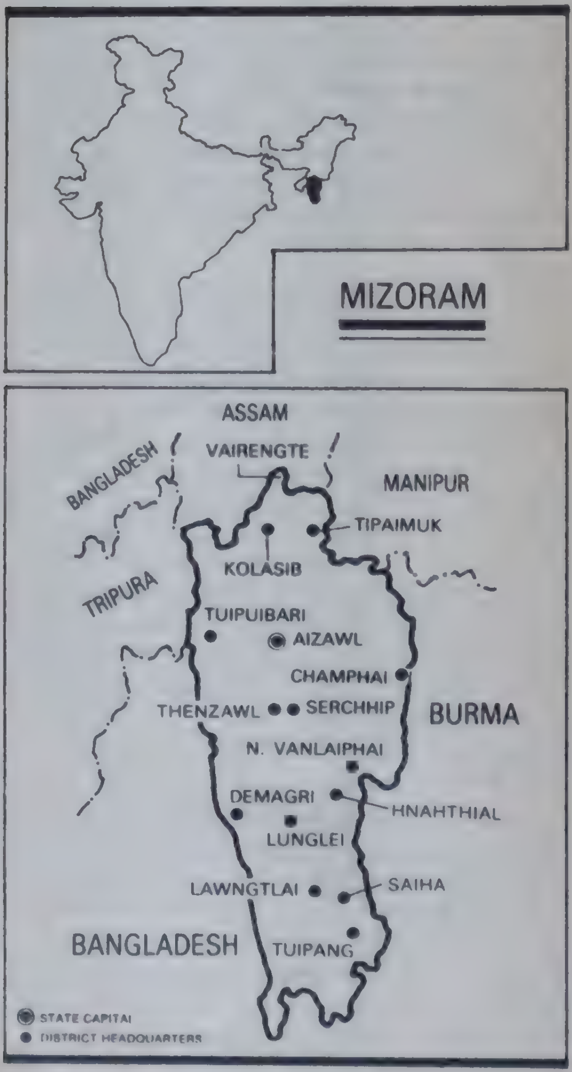
During the British administration, the Mizos raided British territories and even attacked fortified positions. The British army moved against the Mizos and occupied their territory. It was annexed to British India in 1891. In 1898, the entire Mizo territory was formed into the Lushai Hills District and made a part of Assam. Although the Mizos were subjugated, the British did not interfere with their village administration. The Mizo Chiefs carried on the day-to-day administration in the traditional manner.

With independence, Mizoram became a district of Assam. Because of neglect by the authorities, the Mizos felt that it was a bad bargain for them to continue as part of India and started agitations since 1966.

disturbed area. Armed Forces (Special Powers) Act also was invoked. On June 30, 1986, the historic Mizoram Peace Accord was signed between the Government of India and the Mizo National Front ending the two-decade old insurgency.

The Mizos are divided into various tribes—the Lushais, Pawis, Paithes, Raltes, Pang, Hmars, Kukis, Maras, Lakhers, etc. In the 19th century the Mizos came under the influence of British missionaries and many Mizos were converted to Christianity.

The Mizo language had no script of its own. The missionaries introduced the Roman script for the Mizo language and started teaching English also. The cumulative result was a high precentage of literacy. The majority of the tribes are Christians and speak Mizo and English. But some tribes on the border like the Chakmas are Buddhist and speak Bengali.



Administration. Mizoram has a single-chamber legislature consisting of 33 members. The territory has three Districts, 9 Sub-Divisions, 3 autonomous Hill Distric Councils, 6 Towns (as per 1981 census), 23 Police Stations and 301 Village Councils (instead of Gram Panchayats).

Districts

District	Area (sq. km)	Population (1981)	Headquarters
Aizawl	12589	340826	Aizawl
Lunglei	4536	86511	Lunglei
Chhimtutipui	3957	66420	Chhimtuipu
Total	21081	493757	

State of Economy. Agriculture is practically the only occupation in Mizoram. The territory is famous for its fibreless ginger, although other cash crops like mustard, sesame and potatoes are also grown. However, the cultivation method— "Jhum" —is very primitive and destructive. The Mizoram Government is now trying to induce the peasants to change over to more permanent systems of cultivation like terraced farming on the hill sides. There are also schemes to grow plantation crops like rubber, coffee, tea, etc.

Paddy is the chief food crop, followed by maize. They are grown on the slopes of hills.

There is no major industry in Mizoram. Handloom and handicraft are the major industrial activities in the Territory and one Engineering Unit had developed a new design of machine-combined ginning and carding.

Tailoring, knitting and embroidery centres have been set up.

Sericulture was in existence in Mizoram for a long time. Sericulture consists of culture and practice of 4 kinds of silk, ie., (1) Mulberry, (2) Eri, (3) Tasar, (4) Muga.

Other industries are: Ginger beverages, oil, fruits preservation, handloom and some other small scale & cottage industries like bakery, printing press, saw mills, brick making, soap making, etc.

Lt. Governor: Hiteshwar Saikia; **Chief Minister**: Laldenga (Mizo National Front).

NAGALAND

Area: 16,579 Sq.Km.; **Capital**: Kohima; **Population**: 7,74,930; **Languages**: English, Ao, Konyak, Angami, Sema and Lotha. **Literacy**: 41.99%

Physiography: The State of Nagaland is a narrow strip of mountainous territory between the Brahmaputra Valley of Assam and Burma. On the east it shares India's international boundary with Burma. On all other sides it is bounded by Indian territory—Manipur on the south, Assam on the west and north, and Arunachal Pradesh on the north east.

Excepting some areas in the foothills, the State is mountainous. Saramati, the highest peak, is 12600 ft. high and Kohima, the capital, is 4800 ft. above sea level. The main rivers that flow through the state are Dhansiri, Doyang, Dikhu and Jhanji.

The population of Nagaland is almost entirely tribal. There are many separate tribes and sub-tribes among the Nagas with their own distinctive languages and cultural features. Kohima district is the home of the Angamis, Zeliangs, Rengmas and a small group of Kukis, Semas and other minor groups. Mokokchung is the home of Aos, Wokha district of the Lothas and Zunheboto district of the Semas. Tuensang district is the home of the Chang, the Sangtam, the Khemnungan, the Yimchunger, the Phom, the Semas and other minor groups. Mon district is the home of the Konyaks. It is these people who chiefly practise Jhum cultivation.

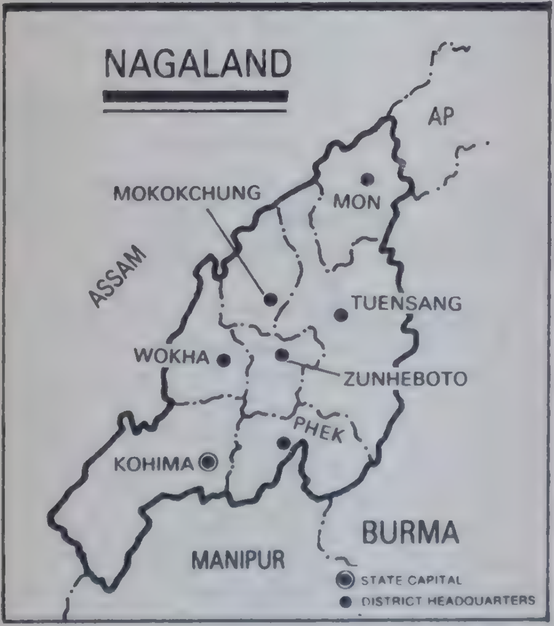
History: The Nagaland State comprises the former Naga Hills district of Assam and the former Tuensang Frontier division of the North East Frontier Agency. These had been made a Centally Administered Area in 1957, administered by the President through the Governor of Assam. In January 1961 the Government of India conferred the status of a State on Nagaland. The State of Nagaland was officially inaugurated on 1st Dec. 1963.

Administration: The State has a unicameral legislature—the Legislative Assembly.

Originally the State was divided into 3 districts. In Dec. 1973, the districts were reconstituted as above.

Districts

District	Area (Sq.Km)	Population 1981	Headquaters
Kohima	4041	250105	Kohima
Phek	2026	70618	Phek
Mokokchung	1615	104193	Mokokchung
Zunheboto	1255	61161	Zunheboto
Wokha	1628	57583	Wokha
Tuensang	4228	152332	Tuensang
Mon	1786	73938	Mon
Total	16579	774930	



State of Economy: Agriculture is the main occupation of 90% of the population. Rice is the important food grown.

Although agriculture is the mainstay of the state, only a little more than one-third of the total area is cultivable. Considering the hilly terrain, this is not unusual but the main drawback is that cultivation is vitiated by what is called jhumming. Under this system, forest lands are cut down and burnt and crops are planted in the burnt out lands. After a crop or two, these lands are abandoned and fresh forests are cut down and burnt. This leads to soil erosion and permanent loss of fertility to the soil.

But now the Govt. is encouraging terraced cultivation under various developmental programmes which are increasingly being adopted by people. The area under jhum cultivation is 87339 hectares and under terraced cultivation 62091 hectares.

Nagas have an artistic hand in many crafts. Carving of beautiful designs with their simple equipment like dao, homemade colours and pieces of bamboo is practised mostly for domestic and local requirements.

Nagaland has achieved remarkable progress in small and medium industries. Big industries are being planned although at present there is only 1 sugar mill, 1 pulp and paper mill and one plywood factory. One cement factory is also coming up.

Among the new industries are plastic moulding, hume pipes, polythene bags and rubber chappals.

Governor: S. M. H. Burney

Chief Minister: S. C. Jamir (Congress)

ORISSA

Area: 1,55,707 Sq.Km.; **Capital:** Bhubaneswar; **Population:** 2,63,70,271; **Language:** Oriya; **Literacy:** 34.12%

Physiography Orissa lies on the east coast of India. It is surrounded by West Bengal in the north-east, Bihar in the north, Andhra Pradesh on the south-east, Madhya Pradesh on the west and Bay of Bengal on the east. The whole State lies in the tropical zone and is divided into four distinct tracts, viz, the northern plateau, the eastern ghats, the central tract and the coastal plains. The State is drained by three great rivers, the Mahanadi, the Brahmani and Baitarani and some lesser rivers, all of which flow into the Bay of Bengal.

The biggest and the most famous lake in Orissa is the Chilka lake. Originally, it was part of the Bay of Bengal, but was subsequently closed up by sand dunes. It is 64 km along and 16 to 20 km wide. There are two beautiful islands in the lake namely Parikud and Malud. Two other lakes call for mention, the Ansupa Lake (Cuttack District), about 5 km long and 1.6 km broad, and the Sara Lake, (Puri District) about 5 km long and 3 km wide.

Orissa has an equable climate, neither too hot nor too cold. In some places, however, extremes of climate are experienced, namely, in the western districts like Bolangir, Sambalpur and Sundargarh. The average rainfall in the State is 150 cm. There is no desert or semi-desert area in the State.

History. Orissa, the land of the Oriyas, was known as Kalinga in the ancient days. In the third century B.C. (268 B.C.) Ashoka, the Mauryan emperor, sent a powerful force to conquer Kalinga which offered stubborn resistance. Kalinga was subdued the carnage which followed struck Ashoka with remorse. It is here, where Ashoka "the Terrible" was transformed to Ashoka "the Compassionate". After the death of Ashoka, Kalinga regained its independence. In the second century B.C. Kalinga became a powerful country under its ruler Kharavela. With the death of Kharavela, Orissa passed into obscurity. In the 4th century A.D. Samudragupta set out on his conquest of the south from Magadha. He invaded Orissa, which lay astride his path and overcame the resistance offered by five of its kings. In A.D. 610, Orissa came under the sway of King Sasanka. After Sasanka's death Harsha conquered Orissa.

The country had its own independent dynasty of rulers (the Ganga dynasty) in the 7th Century A.D. In A.D. 795 Mahasivagupta Yayati the Second, came to the throne and with him began the most brilliant epoch in the history of Orissa. He united Kalinga, Kengoda, Utkala and Kosala in the imperial tradition of Kharavela. He is believed to have built the famous Jagannatha Temple at Puri. Under the kings of the Ganga dynasty, Orissa continued to flourish. Narasingha Dev of this dynasty is reputed to have built the unique temple of the Sun at Konarak.

From the 14th century, Orissa was ruled by successive Muslim Kings till 1592 when Akbar annexed it to the Mughal Empire. With the decline of the Mughals, the Marathas occupied Orissa. They continued to hold it till the British took over in 1803.

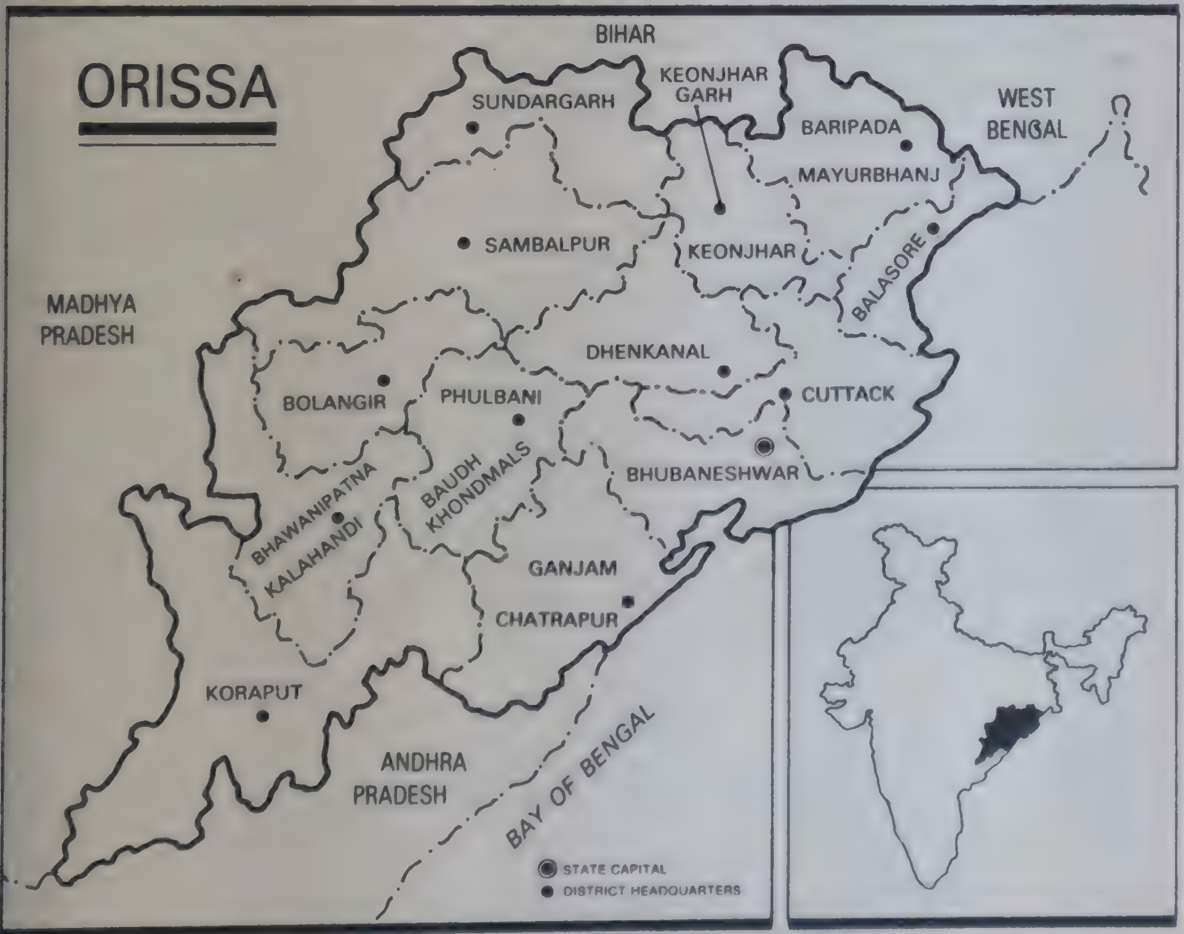
Orissa was made into a separate province in 1936. With independence, the Princely States in and around Orissa, surrendered their sovereignty to the Government of India. By the States Merger (Governor's Provinces) Order 1949, the Orissa Princely States were completely merged with the State of Orissa on 19th August, 1949.

Administration The legislature is unicameral—the Legislative Assembly consisting of 147 members.

The State is divided into 3 revenue divisions, Central, Northern and Southern and thirteen districts.

Districts

District	Area Sq.Km.	Population 1981	Headquaters
Baleshwar	6394	2252808	Baleshwar
Phulbani	11070	717282	Phulbani
Balangir	8903	1459113	Balangir
Cuttack	11211	4628800	Cuttack
Dhenkanal	10826	1582787	Dhenkanal
Ganjam	12527	2669899	Chhatrapur
Kalahandi	11835	1339192	Bhawanipatna
Kendujhar	8240	1114622	Kendujhar
Koraput	27020	2484005	Koraput


ORISSA
BIHAR
SUNDARGARH
KEONJHAR GARH
BARIPADA
WEST BENGAL
MAYURBHANJ
SAMBALPUR
KEONJHAR
BALASORE
MADHYA PRADESH
DHENKANAL
BOLANGIR
PHULBANI
CUTTACK
BHUBANESHWAR
BHAWANIPATNA
KALAHANDI
BAUDH KHONDMALS
GANJAM
CHATRAPUR
KORAPUT
ANDHRA PRADESH
BAY OF BENGAL
STATE CAPITAL
DISTRICT HEADQUARTERS

Mayurbhanj	10412	1581873	Baripada
Puri	10159	2921045	Puri
Sambalpur	17570	2280976	Sambalpur
Sundargarh	9675	1337871	Sundargarh
Total		26370271	

Orissa has a high percentage of Scheduled Castes and Tribes which together make 9.78 million out of a total of 26.37 million people.

State of Economy Orissa's agro-based economy is always upset by some natural calamities like flood, drought, tornado or cyclone. Flood and drought are common to many States but only a few States are subject to cyclones and tornado. Orissa is one of the few. Cyclone has in recent years become a regular feature like flood or drought. In 1980 an unprecedented flood caused untold miseries to the people in nine districts of the state.

Over 76% of the people are dependent on agriculture. Out of the gross cropped area of 87.46 lakh hectares, 18.89 lakh hectares are irrigated. Rice, pulses, oil-seeds, jute, mesta, sugarcane, coconut and turmeric are important crops. The State contributes about one-tenth of the rice production in India.

Orissa's vast mineral, marine and forest resources provide adequate opportunities for industries. Sixtysix large and medium industries are in operation since 1983. More than 9,000 small scale industries with an investment of Rs. 7,178,86 lakh with employment potential of 64798 persons and 2,25,453 artisan based industries with an investment of Rs. 2,779.74 lakh poroviding employment to over 3,66,000 persons have been set up.

The Central Sector Projects are: Steel Plant at Rourkela, Sad Complex at Chhatrapur, Heavy Water Project at Talcher, Coach Repairing Workshop at Mancheswar, Aluminium Complex at Koraput, Captive Power Plant at Talcher, Aluminium Smelter at Talcher and Fertilizer Plant at Paradeep.

Tourist Centres. Bhubaneswar, the present capital of Orissa is known as the cathedral city of India on account of its numerous temples. A complete study of the "Kalinga Style" of architecture from its every inception to maturity spread over a period of about two thousand years is epitomised in the monuments of Bhubaneswar. Places of interest are: Lingaraja Temple, Mukheswar Temple, Ananta Basudeva Temple and Rajarani Temple, the Jain and Buddhist Rock-cut caves of Khandagiri, Udayagiri and Dhauli together with Ashoka's rock edict.

Bhubaneswar is connected with Calcutta and Vizag by daily flights and New Delhi by triweekly Boeing flights. Also there are express trains to Delhi, Calcutta, Madras and Secunderabad and buses to Calcutta, Vizag, Raipur, Ranchi and Tata.

Puri (Jagannath Puri) is a coastal town and beach-resort in Orissa. It is 62 km from Bhubaneswar and is one of the four dhamas (Holy places of pligrimage) in India—the three others being Badri-Kedarnath in the north, Rameswaram in the south and Dwaraka in the west. The presiding deities in the temple are Jagannath Balabhadra and Subhadra. Every year, in June-July (Asadha Sukla Dwitiya), thousands of devotees from all over India and abroad arrive at Puri to participate in the Car-Festival.

Konark is about 65 km from Bhubaneswar and 85 km from Puri. It is famous for the great temple of the Sun-God, conceived as a giant celestial chariot with twenty-four exquisitely carved wheels, drawn by seven impetuous horses. The temple is profusely sculptured with exquisite figures and figurines, fixed by an astonishing energy, trapped in stone.

Governor: B. N. Pandey; **Chief Minster**: J. B. Patnaik (Congress)

PUNJAB

Area: 50367 Sq. km; **Capital**: Chandigarh; **Population**: 16788915; **Language**: Punjabi; **Literacy**: 40.74%

Physiography: Punjab is bounded on the west by Pakistan, on the north by Jammu and Kashmir, on the north east by Himachal Pradesh and on the south by Haryana and Rajasthan. Physically, the state may be divided into two parts, sub-Shivalik strip and Sutlej-Ghaggar Plain. The sub-Shivalik strip covers the upper portion of Ropar, Hoshiarpur and Gurdaspur districts.

The Sutlej-Ghaggar Plain embraces the

other districts of the Punjab. The land is highly fertile as they are formed by the tributaries of the Indus, Ravi, Beas, Sutlej and the river Ghaggar.

History. The word "Punjab" is made up of two Persian words 'Panj' and 'Aab', Panj means five and Aab means water. This name was probably given to this land of five rivers possibly in an era when this region came into close contact with Persia, prior to that period this region was known by different names at different times. Probably, when at the height of its glory it was known as Sapta Sindhu, the land of the seven rivers, namely Sindhu (Indus), Vitasta (Jehlum), Asuhi (Chenab), Purushin (Ravi), Vipasa (Beas), Satadru (Sutlej) and Saruri (Sarasvati). The last one is a dried up stream now and its traces, according to geologists, are found in the present seasonal streams that flow near Pehowa in Haryana. During the Greek occupation, the territory had shrunk into the area covering five rivers.

Punjab lies in the north west of India. Being in the way of invaders from the north, Punjab has had to take a lot of battle ring from the invaders. Punjab emerges into history with he coming of the Aryans into India. The Aryans in the early Vedic age apparently settled in the Punjab and its neighbourhood. In 522 BC Darius of Persia conquered the erritories round about the Punjab and made hem a Satrapy of Persia. In 326 BC, Alexander the Great overran the Punjab. For a time, Mecedonian governors controlled the Punjab but they were defeated by Chandragupta Maurya, who annexed the entire territory. With the decline of the Mauryan empire the Scithians occupied north west India and after hem, the Parthians. The Kushans came next. hereafter the Punjab continued under indigenous rulers.

From the tenth century AD began a series Muslim invasions culminating with Babar, e founder of the Mughal Empire. With the decline of the Mughal empire two other Muslim invaders crossed into India, Nadir hah in 1738 and Ahmed Shah Abdali in 1748, '50 and 1751, The Punjab had the worst of l these invasions.

The Sikh faith, which played a decisive le in the creation of a Punjabi-speaking ate, came into being during a period of ligious revival in the 15th and 16th centuries. It was founded as a new religious order by Guru Nanak. He was followed by nine Gurus. The subsequent 200 years witnessed the growth of Sikhism and its transformation into a militant organisation.

Guru Angad developed Gurumukhi script by combining the scripts current in north India at that time. Guru Ram Das laid the foundation of the city of Amritsar. Guru Arjun Dev compiled the Adi Granth. His son Guru Har Gobind started training his followers in the military art.

Punjab was annexed to British India by Lord Dalhousie in March, 1849. But the spirit of the Punjab remained unvanquished. Through the centuries Punjab became the sword arm of British India.

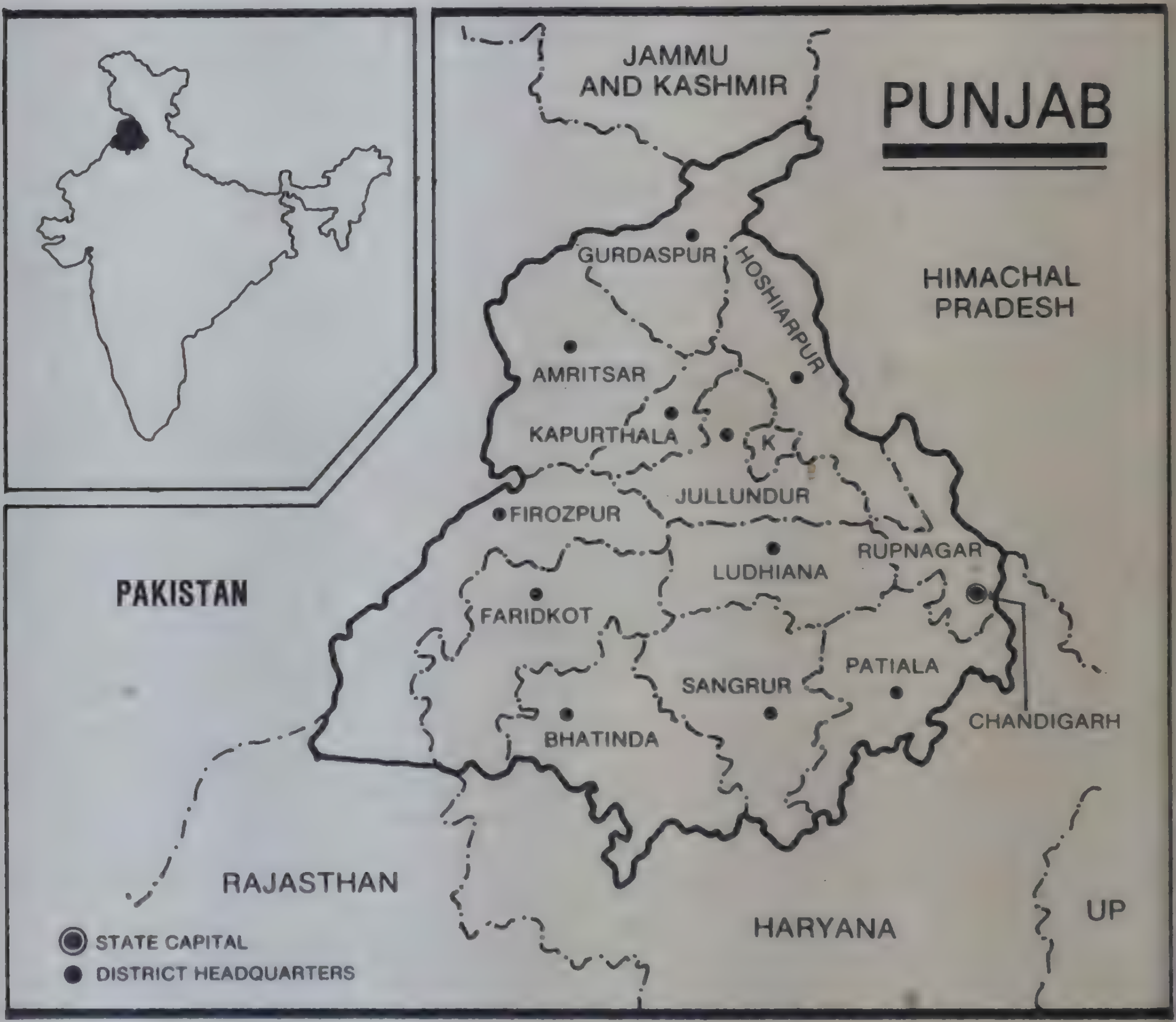
Punjab was constituted a separate province of India in 1937. With the partition of India, Punjab was divided between India and Pakistan as East Punjab and West Punjab. On Nov. 1, 1956 the Princely States adjoining Punjab were formally absorbed into the Punjab State. On Nov. 1, 1956, Punjab was divided into three units—Punjab comprising the predominantly Punjabi-speaking areas, Haryana made up of the Hindi-speaking districts and Kharar tehsil and Chandigarh the Capital. Hilly areas were transferred to Himachal Pradesh.

Administration. The Legislature is unicameral, the Legislature Assembly. The State is divided into 12 districts.

Districts

District	Area in Sq. km.	Population (1981)	Headquarters
Amristsar	5087	2188490	Amristsar
Bhatinda	5551	1304606	Bhatinda
Faridkot	5740	1436228	Faridkot
Ferozepur	5874	1307804	Ferozepur
Gurdaspur	3562	1513435	Gurdaspur
Hoshiarpur	3881	1243807	Hoshiarpur
Jalandhar	3401	1734574	Jalandhar
Kapurthala	1633	545249	Kapurthala
Ludhiana	3857	1818912	Ludhiana
Patiala	4584	1568898	Patiala
Sangrur	5107	1410250	Sangrur
Ropar	2085	716662	Ropar
		16788915	

State of Economy. Punjab is primarily an agrarian state and agriculture


JAMMU AND KASHMIR
PUNJAB
GURDASPUR
HOSHIARPUR
HIMACHAL PRADESH
AMRITSAR
KAPURTHALA
K
JULLUNDUR
FIROZPUR
RUPNAGAR
PAKISTAN
LUDHIANA
FARIDKOT
PATIALA
SANGRUR
BHATINDA
CHANDIGARH
RAJASTHAN
HARYANA
UP
STATE CAPITAL
DISTRICT HEADQUARTERS

occupies the most prominent place in Punjab's economy. About 70 percent of the people are engaged in agriculture. As against 51 percent all India average, it has 85 percent of its area under cultivation. Net area under cultivation is 84 percent as against the all India average of 42.65 percent. Compared to all other States, the fertilizer consumption in Punjab is the highest. The efforts of the State Government to provide irrigation facilities, cheap power and agriculture inputs at subsidised rates have acted as a catalyst of agriculture production. Total production of foodgrains rose from 147.77 m tonnes in 1983-84 to 154.50 m tonnes in 1984-85.

Agriculture production is now nearing the saturation point.

As many as 35455 small scale industrial units were set up during the period of three years 1982-83 to 1984-85 as compared to 11607 units set up during the corresponding period of 1977-78 to 1979-80, which is an increase of more than 3 times.

The chief manufactures are textiles, sewing machines, sports goods, sugar, starch, fertilizers, bicylces, scientific instruments, electrical goods, machine tools and pine oil. Altogether there were 43794 industrial units employing about 188057 workers.

There were 100899 small scale units registered in the state upto 31-3-1985. These units employed 4,96,000 persons during 1984 produced goods valued at Rs.1625 crore.

Tourist Centres: Punjab is dotte with places of historical and cultural interest Ropar, one of the centres of Indus Valle civilization, Amritsar, the city of the Golde Temple, sacred to the Sikhs, the ancient for of Bhatinda, the architectural monuments o Kapurthala, the City of Gardens, Patiala an Chandigarh the capital designed by th French architect Le Corbusier are amon the leading tourist attractions of the state

Governor: Siddhartha Shankar Ray, **Chie Minister**: Surjit Singh Barnala (Akali Dal

RAJASTHAN

Area: 342239 Sq. km.; **Capital:** Jaipur; **Population:** 3,42,61,862; **Languages:** Hindi and Rajasthani; **Literacy:** 24.05%

Rajasthan is one of the border States of India, sharing India's frontier with Pakistan on the West and Northwest. Punjab bounds it on the north, Haryana and Uttar Pradesh on the north-east and east, Madhya Pradesh on the south and south-east and Gujarat on the south-west.

Physiography: Rajasthan is one of the few states of India that show great contrast from one area to another. This disparity is noticeable in respect of climate, soil, vegetation, mineral resources, etc. However, the state may be divided into 6 regions. (1) Western arid region, (2) Semi-arid region, (3) South eastern region, (4) Chambal ravines, (5) Aravalli region and (6) Eastern region.

The Western arid region covers the whole of Jaisalmer district, north-western part of Barmer and Jodhpur, South-east Bikaner, South western Churu and Western part of Nagaur. This region is characterised by typical desert conditions and forms the largest region in the state.

The semi-arid region lying west of the Aravalli ranges covers the districts of Jalore, Pali, south-eastern Jodhpur and Nagaur, Sikar, Jhunjhunu and north-eastern part of Churu. The southern part of this area is watered by the Luni river while the northern part is an area of inferior drainage.

The Rajasthan canal (named as Indira Gandhi Canal) passes through the north-west portion of this region irrigating at present Ganganagar district and the north western part of Bikaner district.

The Aravalli region covers almost the whole of Udaipur, south eastern part of Pali and Sirohi and the western part of Dungarpur districts. The area is dominated by the mountains of the Aravalli range and outlying hills.

The eastern region comprises the districts of Jaipur, Ajmer, Sawai Madhopur, Bhilwara, Bundi, Alwar, Bharatpur and north-western part of Kota. It is mainly drained by Banas river and its tributaries. This region has the largest number of industries, located mainly at Jaipur, Ajmer, Kota, Bhilwara and Shahpura.

The south-eastern region embraces the districts of Banswara, Chittorgarh, Jhalawar and Kota. The Kota-Jhalawar area consists of stony uplands but the Chambal river and its tributaries have formed an alluvial basin in Kota.

The Chambal ravine region lies along the river Chambal, where it forms the boundary between Rajasthan and Madhya Pradesh.

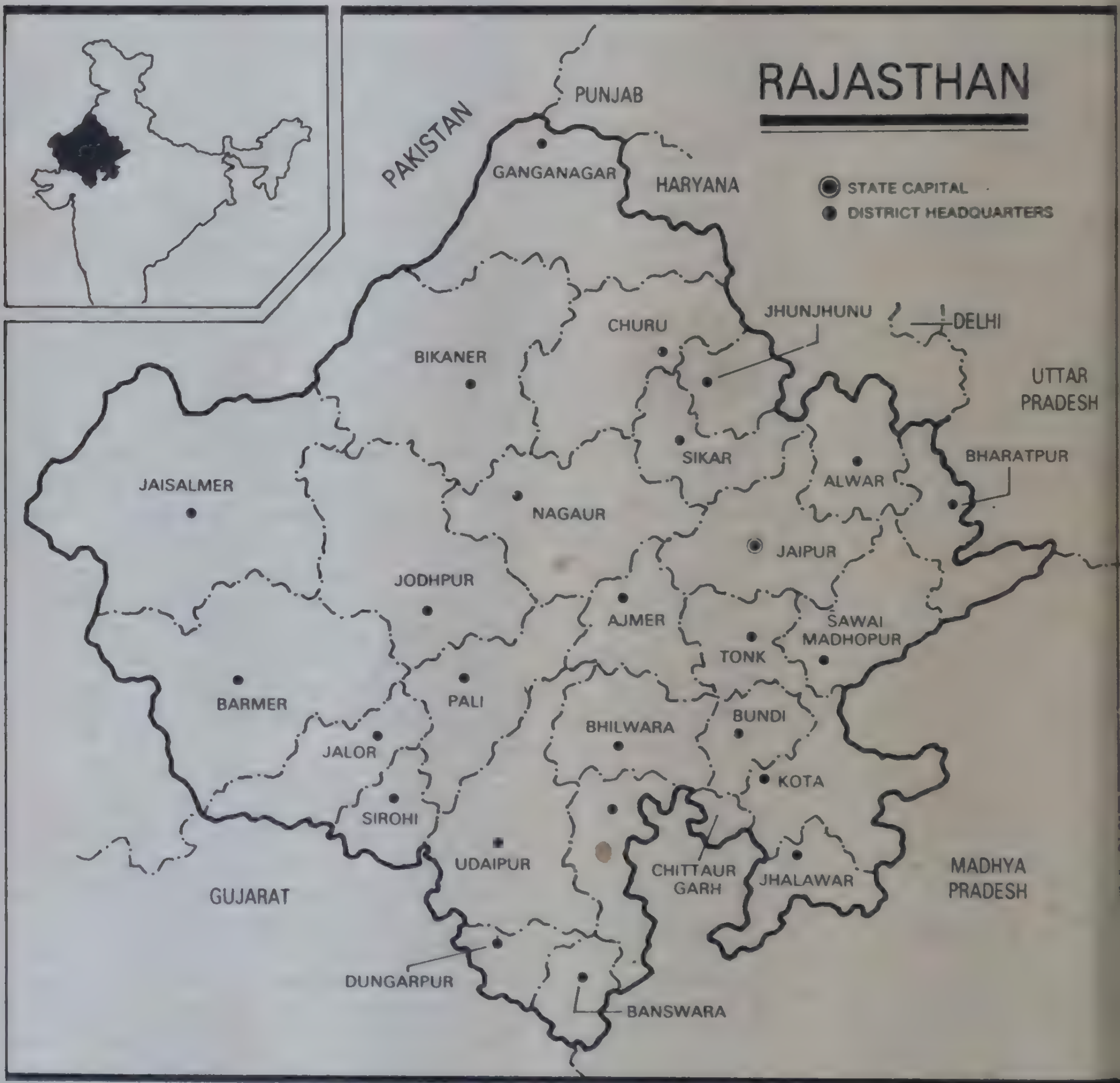
History: The State of Rajasthan is an amalgam mainly made up of the old princely states of Rajasthan. It took some eight years for the state to come into its present shape. The first step towards the formation of this state was taken on March 17, 1948 with the formation of the Matsya Union, a Union of four princely states, Alwar, Bharatpur, Dholpur and Karauli. The second step came with the formation of Rajasthan, a Union of 9 States-Baanswara, Bundi, Dungarpur, Jhalawar, Kishangarh, Kota, Pratapgarh, Shahpura and Tonk on March 25, 1948. The State of Udaipur joined this union on April 18, 1948, thus transforming the Union into the United States of Rajasthan.

The next two important steps were taken in 1949, the first on March 30, 1949 when the four large states of Bikaner, Jaipur, Jaisalmer and Jodhpur joined the United States of Rajasthan and the second on April 25, 1949 when the Matsya Union joined up. The new union was known as the the United States of Greater Rajasthan. The Union of Greater Rajasthan was further enlarged by the accession to it of the state of Sirohi on Jan. 25, 1950. The final step was taken when the state of Ajmer, the tehsil of Abu and the area of Sunel Tuppa were integrated with Greater Rajasthan on Nov. 1, 1956, to be known simply as Rajasthan.

Administration: The legislature is unicameral—the Legislative Assembly. The State is divided into 27 districts, 84 subdivisions and 203 tehsils.

Districts

District	Population 1981	Area in (Sq. km.)	Headquarters
Ajmer	1440366	8479	Ajmer
Alwar	1771173	8382	Alwar


RAJASTHAN
STATE CAPITAL
DISTRICT HEADQUARTERS
PAKISTAN
PUNJAB
HARYANA
DELHI
UTTAR PRADESH
MADHYA PRADESH
GUJARAT
GANGANAGAR
BIKANER
CHURU
JHUNJHUNU
SIKAR
ALWAR
BHARATPUR
JAISALMER
NAGAUR
JAIPUR
JODHPUR
AJMER
SAWAI MADHOPUR
TONK
BARMER
PALI
BUNDI
BHILWARA
JALOR
KOTA
SIROHI
UDAIPUR
CHITTAUR GARH
JHALAWAR
DUNGARPUR
BANSWARA

Banswara	886600	5037	Banswara
Barmer	1118892	28387	Barmer
Bharatpur	1889132	8093	Bharatpur
Bhilwara	1310379	10450	Bhilwara
Bikaner	848749	27231	Bikaner
Bundi	586982	5550	Bundi
Chittorgarh	1232494	10858	Chittorgarh
Churu	1179466	16829	Churu
Dungarpur	682845	3770	Dungarpur
Ganganagar	2029968	20629	Ganganagar
Jaipur	3420574	14000	Jaipur
Jaisalmer	243082	38401	Jaisalmer
Jalore	903073	10640	Jalore
Jhalawar	784998	6216	Jhalawa
Jhunjhunu	1211583	5929	Jhunjhun
Jodhpur	1667791	22860	Jodhpu
Kota	1559784	12437	Kot
Nagaur	1628669	17718	Nagau
Pali	1274504	12391	Pa
S. Madhopur	1535870	10593	S. Madhopu
Sikar	1377245	7732	Sika
Sirohi	542049	5135	Siro
Tonk	783635	7200	Ton
Udaipur	2356959	17267	Udaipu
Dholpur	583156	3000	Dholpu

tate of Economy. The principal rops are jowar, bajra, maize, wheat, grams, l-seeds, cotton, sugarcane and tobacco. A eficit state in foodgrains in the pre-inde-endence years, the state achieved an all-me high in farm yield in 1967-68 (66 lakh nnes). This abundance was followed by vo years of want and unprecedented scarci- which shattered the conomy of the state. he year 1970-71 proved to be a year of lenty with a production of 88.41 lakh tonnes, ne highest recorded production for the ate. The actual production of foodgrains for ne year 1983-84 was 100.57 lakh tonnes.

Production target for kharif and rabi crops r 1984-85 has been fixed at 110.54 lakh nnes. The estimated production is 81.07 nnes.

Textiles, rugs and woollen goods, sugar, ement, glass, sodium, oxygen and acetylene units, pesticides, insecticides and dyes are some of the major industries. Other enterprises include the manufacture of caustic soda, calcium carbide, nylon tyre cord and copper smelting.

Rajasthan handicrafts are famous all over the world. Important handicrafts are marble work, woollen carpets, jewellery, embroidery, articles of leather, pottery and brass embossing.

Tourist Centres. Rajasthan has several sights to offer the tourist, especially in ancient and medieval architecture. Places of interest are Mount Abu, Ajmer, Alwar, Bharatpur, Bikaner, Jaipur, Jodhpur, Udaipur, Pali, Jaisalmer and Chittorgarh. In the year 1984-85 nearly 2.60 lakh foreign tourists and 33 lakh home tourists visited Rajasthan.

Governor: Vasantha Rao Patil; **Chief Minister:** Hardeo Joshi (Congress).

SIKKIM

Area: 7,096 sq. km.; **Cap:** Gangtok; **opulation:** 3,16,385; **Languages:** Lepcha, hutia, Hindi, Nepali, Limbu; **Literacy:** 34%.

Sikkim, the 22nd State of the Indian Union, a small mountain state in the eastern malayas. It is also the smallest state in dia. It is bounded by Tibet on the north, epal on the west and Bhutan on the east. est Bengal lies to its south. It is the smallest well as the least populous state in the ion. Sikkim is strategically important for dia. It lies astride the shortest route from dia to Tibet.

ikkim became a State of the Indian Union der the Constitution (Thirty-eighth endment) Act, 1975, which came into ce with retrospective effect from the 26th ril, 1975, when the amending bill was ginally passed by both Houses of Parlia-nt.

ysiography. The State is entirely untainous. About a third of the land is vered with dense forests, where sal, sim- bamboo and other plants thrive. Some of finest forests lie in the northern most as in Lachen and Lachung. Here the untains rise to elevations of 7000 metres more. Kanchenjunga (8579 m), the ld's third highest peak, rises from this a. The forests here are inaccessible and remain for the most part unexploited.

On an average, Sikkim receives 125 cm. rain. But the rainfall varies widely between various regions like sheltered valleys, foothills and high mountains. River Tista and its tributaries drain the state. Tista is a perennial river being both rain-fed and snow-fed.

Sikkim boasts of several hundred different kinds of orchids and is frequently referred to as a botanist's paradise.

The population of Sikkim is mainly made up of the Lepchas, the Bhutias and their allied clans and the Nepalese.

The Lepchas, who are believed to have come from Assam were the first settlers in Sikkim. The Bhutias came from Tibet in the 14th century. The Tsongs are a minority community. In the 18th and 19th centuries the Nepalese came into Sikkim and established themselves. And, today, they form the majority community in the State.

Administration. The State has a unicameral legislature.

Sikkim is divided into four districts.

Districts

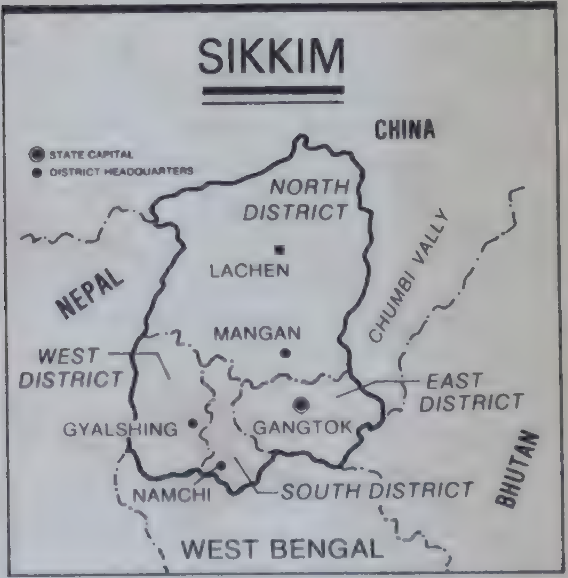
District	Area (sq. km.)	Population (1981)	Head quarters
East	954	1,38,105	Gangtok

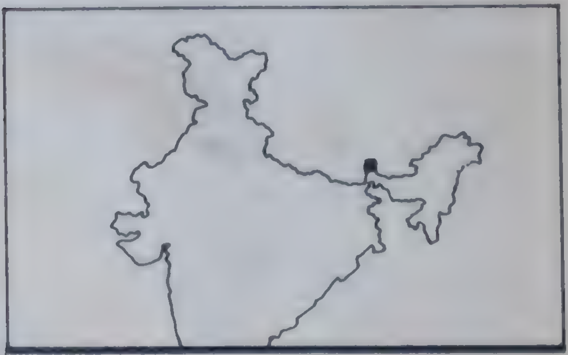
North	4,226	26,390	Mangan
South	750	75,691	Namchi
West	1,166	74,813	Gyalshing

State of Economy. The principal crops are maize, paddy, millet, wheat and barley. Orange and cardamom are the main cash crops. Other important crops are potatoes, apples and buck-wheat.

As the majority of the population depends on agriculture for livelihood, the Governments at both the Centre and the State have accorded high priority to agriculture. The Govt. has set up 9 regional centres and 7 sub-regional centres for agricultural development. A number of high yielding seeds suitable to local climatic conditions have been developed. The production of seeds in Government farms has increased from 1590 quintals in 1979-80 to 4266 quintals in 1983-84.

The foodgrains production has increased from 57,420 tonnes in 1979-80 to 84,000 tonn in 1983. Campaigns for amendment of acid soil and micro-nutrient application have al recorded significant progress.





The research complex of Indian Coun for Agricultural Research, set up at Tadon is doing useful research work.

Sikkim's tea estate at Temi and Kewzi extends over an area of 500 acres who product is exported to USSR and We Germany. Coffee plantation has also be started at Majitar on an experimental bas with commendable results.

Sikkim as a whole has been declare industrially backward.

The main industrial units are the Fo Preservation Factory at Singtam, Sikkim Ta neries Ltd. at Majitar, Sikkim Flour Mills Tadong and Sikkim Distilleries at Rang and HMT watch assembly unit (Sikkim Ti Corporation).

In 1982 Sikkim Time Corporation (SITC broke its own record by assembling 3. lakh watches. SITCO now proposes to man facture a million watches every year technical collaboration with HMT.

The Rs. 50-lakh Roller Flour Mill set up Tadong has added an extruder food proce sing plant since 1983 to produce meals higher nutritive value for school childr under a programme sponsored by UNICE

Tourist Centres. Tourism in Sikk has received a big boost in recent yea One of the most significant developments the opening of the route from Pemayang to Yuksam and from Yuksam to Dzongri domestic tourists. Rules and regulations go erning grant of inner line permits to fo igners have been simplified.

Under a crash programme of creat more accommodation for tourists, a 78-b tourist hotel at Gangtok and a 50-bed tou lodge at Pemayangtse in West Sikkim ha been constructed. Private hotels have be encouraged to expand hotel accommodat by arranging loans for them at low rates interest.

With the opening of a Tourist Informat Centre in Siliguri (West Bengal), tour have no longer to go to Darjeeling for gett permits for visiting Sikkim. Tourist Infor on Centres have been set up also in New elhi and Calcutta.

The newly opened 'Blue Sheep' restaurant, the Tourist Information Centre premises eets a long-felt need for a standard res- urant with Indian, Chinese and continental cuisines. One more restaurant-cum-lodge is proposed to be set up at Rumtek Dharma Chakra Centre.

Governor: T. V. Rajeshwar. **Chief Minister:** N. B. Bhandari (Sikkim Sangram Parishad).

TAMIL NADU

Area: 130,058 sq. km.; **Capital:** Madras; **opulation:** 48,408,077; **Language:** Tamil; **teracy:** 45.78%.

Tamil Nadu is situated on the south eastern de of the Indian peninsula. It is bounded on e east by the Bay of Bengal, in the west by e Arabian Sea and the States of Kerala and rnataka, in the north by Karnataka and dhra Pradesh. It is the eleventh largest ite in India and occupies 4 per cent of the untry's total area.

hysiography. The land mass of the te can be divided into two natural divi- ns; (i) the eastern coastal plain and (ii) the ly region along the north and the west. The astal plain is usually sub-divided into (a) Coromandel plain comprising the dis- cts of Chingleput, South Arcot and North cot, (b) the alluvial plain of the Kaveri delta ending over Thanjavur and part of uchirapalli districts and (c) the dry, south- plains in Madurai, Ramanathapuram, maraj, Anna, Kanyakumari, Pasum Pon thuramalingam, and Tirunelveli Districts.

Along the whole length of the western t, at a distance from the sea varying from to 160 km runs the range of the western ats, a steep and rugged mass averaging 0 metres above the sea level and rising to 0 metres. The Palghat Gap about 25 km in lth is the only marked break in the great untain wall. To the south of this gap, the ge is known as Anaimalai (Elephant Hills).

On the east are the Palni Hills on which is ated the famous hill station of Kodaikanal. slopes of the Western Ghats are covered heavy evergreen forests. These slopes the 'sources of the rivers Kaveri, Vaigai Tamaraparni. The Nilgiris and the imalai are the hill groups with the max- m height.

the famous Ootacamund area of the iris District, the highest peak of Doddabetta is 2640 metres above the sea level. The so-called Eastern Ghats begin in Orissa and pass through Ganjam district of Orissa and run south west through all the districts lying between Ganjam and Nilgiris plateau.

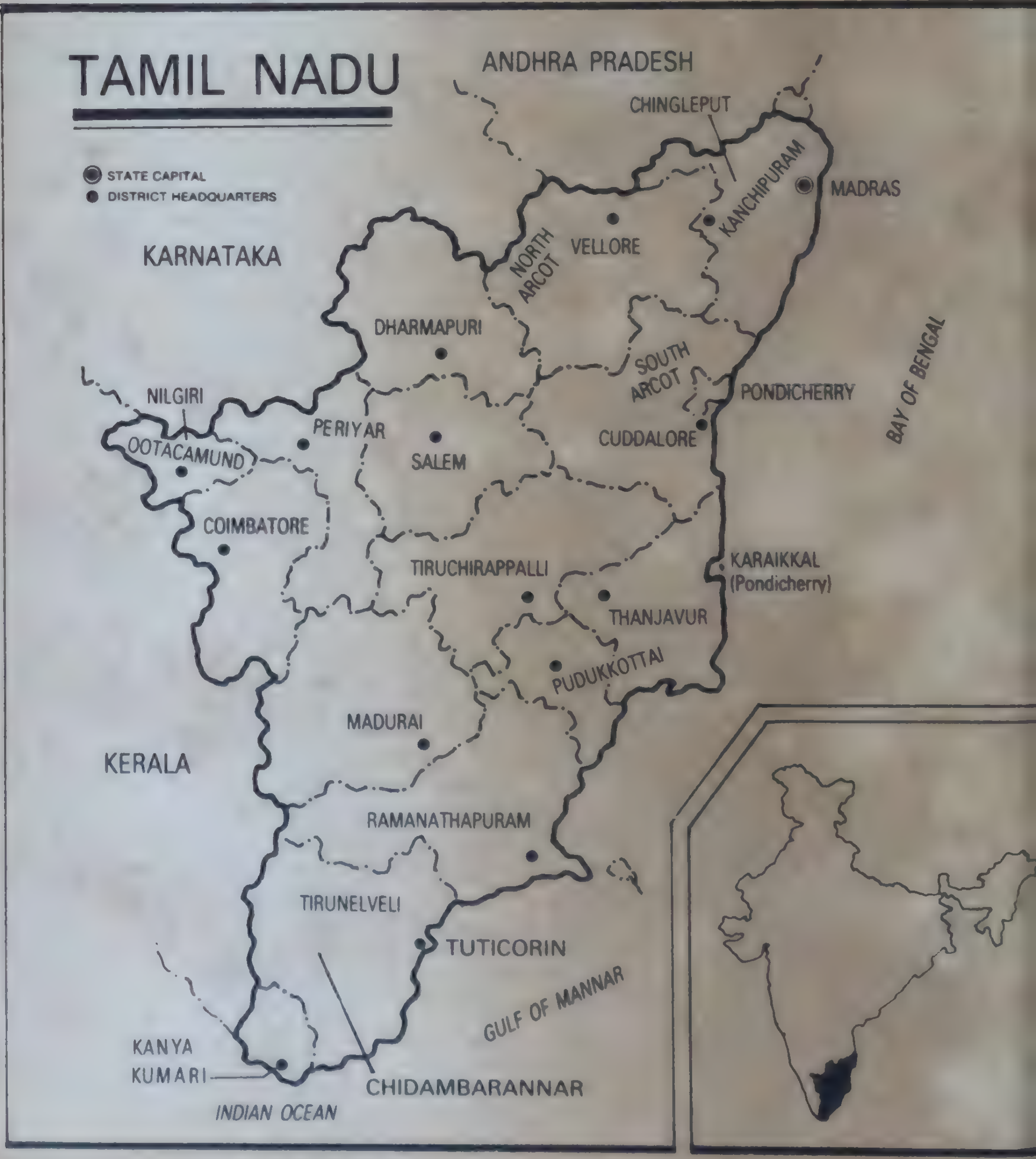
The rivers of the state flows eastward from the western ghats and are entirely rain-fed. The perennial rivers are:- Palar, Cheyyar, Ponnaiyar, Kaveri, Meyar, Bhavani, Amaravati, Vaigai, Chittar and Tamaraparni. The non-perennial rivers are the Vellar, Noyil, Siruliar, Gundar, Vaipar, Valparai and Varshali. The 760-km-long Kaveri is the great river of the State. Rising on the Brahmagiri, a hill in Coorg in the Western Ghats, almost near the Arabian Sea, it travels the entire breadth of the peninsula and forms a large delta at its mouth in the Thanjavur District before flowing into the Bay of Bengal.

History. Tamil Nadu has a very ancient history that goes back some 6000 years. The State represents the nucleus of Dravidian culture in India, which antedated the Aryan culture in India by almost a thousand years. It is generally held that the architects of the Indus Valley Civilizations of the 4th millennium BC were Dravidians and that at a time anterior to the Aryans, they were spread over the whole of India. With the coming of the Aryans into North India, the Dravidians appear to have been pushed into the south, where they have remained confined. Tamil Nadu, with the other southern states, Andhra Pradesh, Karnataka and Kerala, today forms the repositories of the Dravidian Culture.

The Dravida country of which modern Tamil Nadu formed a part, was reputedly under three dynasties, Chola, Pandya and Chera from the 4th century BC. The Cholas occupied the present Thanjavur and Tiruchirappalli Districts and surrounding territories and excelled in military exploits. In the 2nd century BC a Chola Prince, Elara, conquered Ceylon (Sri Lanka). The Pandyas excelled in trade and learning. They controlled the districts of Madurai and Tirunelveli and part of South Kerala. A Pandiyan King sent an embassy to the Roman Emperor Augustus in the first century BC. The Cheras were powerful on the West Coast in what is, today, Central and North Kerala.

The Pallavas of Kanchi rose to prominence in the 4th century AD and dominated the south for another 400 years. In the sixth century they overran the Chola dominio and carried their arms as far as Ceylon (Lanka). The famous Alvars and Nayana sage-poets, flourished during the Pallava e In the 9th century the last of the Pallavas w defeatd by the Cholas who again became great power in the south.

In the 13th century the Pandyas becar dominant. Their Kingdom was a great cent of international trade. The rise of Vijayanag


TAMIL NADU
STATE CAPITAL
DISTRICT HEADQUARTERS
ANDHRA PRADESH
CHINGLEPUT
KANCHIPURAM
MADRAS
KARNATAKA
NORTH ARCOT
VELLORE
DHARMAPURI
SOUTH ARCOT
PONDICHERRY
BAY OF BENGAL
NILGIRI
OOTACAMUND
PERIYAR
SALEM
CUDDALORE
COIMBATORE
KARAIKKAL (Pondicherry)
TIRUCHIRAPPALLI
THANJAVUR
PUDUKKOTTAI
MADURAI
KERALA
RAMANATHAPURAM
TIRUNELVELI
TUTICORIN
GULF OF MANNAR
KANYA KUMARI
CHIDAMBARANNAR
INDIAN OCEAN

spelt the decline of the Pandyas. They were ultimately defeated by Vijayanagar, and their territories were annexed to the Vijayanagar Empire. With the disintegration of the Vijayanagar Empire, Tamil Nadu was parcelled out among several petty kings.

The rise of the Muslim power in India has had its impact on Tamil Nadu, but by and large, Tamil Nadu remained unaffected by the political convulsions in north and central India. With the establishment of the East India Company at Madras in 1639, a new chapter was opened in the history of Tamil Nadu. Slowly but steadily, the whole of Tamil Nadu and most of South India came under British sway.

When India became free, the old Madras province, comprising Tamil Nadu and Andhra Pradesh and part of Kerala, continued as the State of Madras. But the agitation for a separate Andhra State compelled the Government of India to bifurcate the State into two separate States, Andhra Pradesh to include the Telugu-speaking areas and Madras, the Tamil speaking areas. The old capital Madras City was retained by the new Madras State.

Under the States Reorganisation Act 1956, Madras lost the Malabar District and the Kasargod taluk of S. Kanara District to the newly formed State, Kerala, while Madras gained four taluks of the Trivandrum District and Shencotta taluk of the Quilon District from Kerala. The four taluks thus gained were constituted into a new district of Madras as the Kanyakumari District. The new Mysore State (Karnataka) absorbed some parts of the old S. Kanara District (excluding Kasargod taluk) and the Kollegal taluk of the Coimbatore District. In April 1960, 405 sq. miles of Chittoor District in Andhra Pradesh was transferred to Madras in exchange for 326 sq. miles from Chinglepattu and Salem Districts.

On Jan. 14, 1969, Madras State changed its name to Tamil Nadu. However, the capital city is still known by its old name, Madras.

Adminstration. The legislature consists of one house - the Legislative Assembly. The Legislative Council was abolished in 1986.

The State is divided into 20 districts

Districts

District	Area (sq. km.)	Population 1981	Headquarters
Chengalpattu	7920	3616508	Kancheepuram
Coimbatore	10873	3060184	Coimbatore
Dharmapuri	9643	1997060	Dharmapuri
Kanyakumari	1684	1423399	Nagercoil
Madras	128	3276622	Madras
Madurai	6558	2971489	Madurai
Anna	5836	156448	Dindigul
Nilgiris	2549	630169	Ootacamund
N. Arcot	12265	4414324	Vellore
Periyar	4800	2068462	Erode
Pudukkottai	4137	1156813	Pudukkottai
Ramanathapuram	4217	1021764	Ramanathapuram
Kamaraj	4175	1340907	Virudhunagar
Pon Muthuramalingam	4186	972766	Sivagangai
Salem	8643	3441717	Salem
S. Arcot	10898	4201869	Cuddalore
Thiruchirappalli	11208	3612320	Thiruchirappalli
Thanjavur	8670	4063545	Thanjavur
Tirunelveli	11433	3573751	Tirunelveli
*Chidambarannar	—	—	Tuticorin
Total	130058	48408077	

* Chidambarannar Dt. was carved out of Tirunelveli Dt. in September, 1986.

State of Economy. Agriculture is the mainstay of Tamil Nadu's economy. The yield of rice amounting to 2.5 metric tonne per hectare is among the highest in India. At the end of the 6th Plan, Tamil Nadu achieved a production level of 69.17 lakh metric tonne of rice and other cereals, 3.42 lakh m. tonnes of pulses and 13.42 lakh m. tonnes of oil seeds.

Tamil Nadu's sugar yield of 100 m. tonnes per ha. is a world record. About 35 lakh acres have sugar cane grown on them. Cotton is grown 2.8 lakh ha.

The principal plantation crops are tea and coffee.

Tamil Nadu accounts far nearly one fourth of the spinning capacity in India, one fifth of cement, caustic soda and nitrogenous fertilisers and one tenth of the nations production of sugar bicycles and calcium carbide. Tamil Nadu produces 60% of safety matches and 77% of finished leather

The Tamil Nadu Industrial Development Corporation (TIDCO), State Industries Promotion Corporation of Tamil Nadu (SIPCOT) and TIIC are the major Corporations set up to provide financial assistance and technical knowhow to large, medium and small scale industries. With the aid of these Corporations, industrial complexes called growth centres and industrial estates have been provided in different parts of Tamil Nadu, Hosur, Ranipet, Guindy, Ambattur, Karaikudi, Sivaganga, Paramakudi and Tiruchirappalli.

Tourist Centres. Tamil Nadu Toursim Development Corporation runs a chain of 17 hotels, 1 Beach Resort and 10 Youth Hostels.

It has also constructed Boat houses at Muthukkadu, Ootty, Pichavaram and Yercaud.

Hill Stations: Uthagamandalam (Ootty) Kodaikanal and Yercaud.

Religious Places: Suchindram, Rameswaram, Tiruchendur, Madurai, Palani, Tiruchirapalli, Srirangam, Thanjavur, Kumbakonam, Nagore, Velankanni, Vaitheeswaran Koil, Chidambaram, Tiruvannamalai, Kancheepuram, Tiruttani and Kanyakumari.

Tourist Centres: Mamallapuram, Poompuhar, Pitchawaram, Point Calimere, Courtallam, Hogenakkal, Anamalai Sanctuary, Mudumalai Sanctuary, Vedanthangal Bird Sanctuary, Kalakkad and Vandaloor Zoo and Mundathurai Sanctuary.

At Madras: Fort St. George, Fort Museum, Marina Beach, Snake Park, Guindy Park, Guindy Deer Sanctuary and Children's Park, Egmore Museum, Valluvarkottam Park, Crocodile and Vandaloor Zoo, Muthukkadu Boat House.

Governor: S. L. Khurana. **Chief Minister:** M. G. Ramachandran (AIADMK).

TRIPURA

Area: 10,486 sq. km; **Capital:** Agartala; **Population**: 2,053,058; **Languages**: Bengali, Kakbark and Manipuri; **Literacy:** 41.58%.

Tripura is the second smallest state in India. It was formally declared a Union Territory on November 1, 1957 and elevated to the status of a full-fledged State on January 21, 1972.

Physiography. Tripura is surrounded by Bangladesh on all sides, except for a narrow neck in the North-East, where it borders on Assam and Mizoram.

History. A Hindu State of great antiquity having been ruled by the Maharajas for 1,300 years before its accession to the Indian Union on October 15, 1949. With the reorganisation of States on Sept. 1, 1956 Tripura became a Union Territory. The Territory was made a State on January 21, 1972.

Administration. The Legislature has a single chamber—the Legislative Assembly. The jurisdiction of the Guahati High Court extends over Tripura, with a bench functioning at Agartala.

Tripura is divided into three districts, 10 administrative sub-divisions, 177 tashils and 5215 villages.

Districts

District	Area (sq. km)	Population
North Tripura	3,541	5,41,248
West Tripura	3,359	9,76,252
South Tripura	3,577	5,35,558

State of Economy. About 54.5% of the land is under forest. Only about 24.3% area is available for agricultural use. The principal crops are paddy, wheat, jute, mesta, sugarcane, potato and oil seeds. Agriculture is being practised in about 2.5 lakh ha. Overall production of cereals decreased by about 2.1% in 1984-85.

Tea is a major industry in Tripura. There were 49 registered tea gardens covering an area of 5.527 lakh hectares and producing 45 lakh kg. of tea per year. This industry has been employing about 10,000 workers. Three Workers' Co-operative Societies have been formed for tea plantation. Tripura Tea Development Corporation, a Government of Tripura undertaking, has also started new plantation under the programme for bringing additional land under tea plantation in the state.

The jute mill set up in Agartala under the public sector produces about 20 tonnes of jute products per day and it employs about 2,000 persons.

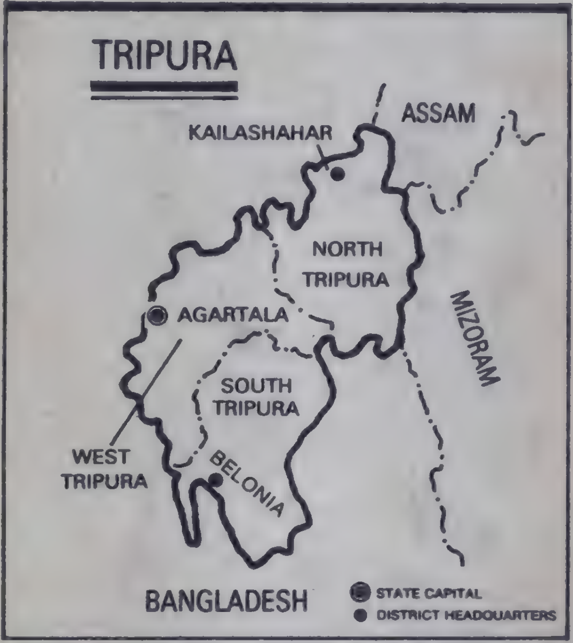
The major small scale industries which have been functioning in the state are Aluminium Utensils, saw mill, steel furniture, carpentry, dry battery, pharmaceuticals, rice mill, washing soap, R.C.C. spun pipes, PVC pipes, flour mill, aluminium conductors, leather goods, polythene pipe, plywood, fruit canning, candle, oil mills, etc.

Handloom is the single largest industry in the state. Weaving is essentially a tribal household industry. Nine pilot centres are running in different parts of the state for imparting training in improved techniques and producing quality handloom goods. Tripura Handloom & Handicrafts Development Corporation sells their products. Apex Weavers' Society caters to the needs of about 50 Primary Weavers Co-operative Societies. The organisations have been marketing products worth Rs. 3 crore a year on average. About 7000 weavers have been getting benefits.

The sericulture industry in the State is developing fast. The area under cultivation of mulberry is about 1200 acres and production of cocoon is estimated to be 5000 kg. per year. A design centre on handicrafts is functioning at Agartala. About 5000 craftsmen are now engaged in production of handicrafts (mainly cane and bamboo) products.

Tourist Centres. Important tourist centres are Nirmahal, Sipahijala, Dumboor Lake, Kamalasagar, Jumpui Hill, Unakoti and Matabari.

Governor: Gen. K. V. Krishna Rao (Retd.).



Chief Minister: Nripen Chakraborty (CPI(M).

UTTAR PRADESH

Area: 2,94,411 sq. km; **Capital:** Lucknow; **Population:** 1,10,862,813; **Language:** Hindi; **Literacy:** 27.38%.

Uttar Pradesh is the most populous state in India. In area, it ranks fourth, after M.P., Rajasthan and Maharashtra. It covers about 9 per cent of the total area of India.

Physiography. Uttar Pradesh is bounded by Tibet and Nepal in the north, Himachal Pradesh in the northwest, Haryana in the west, Rajasthan in the southwest, Madhya Pradesh in the south and southwest, and Bihar in the east.

Uttar Pradesh can be divided into three distinct regions: (1) northern mountains, (ii) southern hills and plateau and (iii) the Ganga plain.

1. The lofty Himalayas embraces Uttar Kashi, Chamoli, Pithoragarh, Tehri-Garhwal, Garhwal and Almora districts, Nainital tehsil

of Nainital district and Chakrata tehsil and a part of Dehra Dun tehsil of Dehra Dun district in the north, covering about one-sixth of the total area of the state.

2. This region covers almost the whole of Jhansi, Jalaun, Hamirpur and Banda districts, the Meja and Karchhana tehsils of Allahabad district, nearly the entire Mirzapur district, south of the Ganga river, and the Chakia tehsil of Varanasi district. The altitude in this area does not generally exceed 300 metres above the mean sea level.

3. Between the Himalayas in the north and the hills and plateau in the south lies a vast homogeneous alluvial plain, one of the largest in the world. Because of the deep alluvium strata the region is almost devoid of minerals, which partly accounts for the very insignificant industrial development of U.P. On the other hand, its high fertility has led to heavy pressure of population on land.

The State has a tropical climate except for the Himalayan region which has a temperate climate.

The main rivers of the State from west to east are the Yamuna, Ganga, Ramganga, Gomati and the Ghaghara. All the rivers, except the Gomati, emerge from the Himalayas. The Yamuna and the Ganga flow from north-east to the south-west in their upper mountainous courses, from the north to the south in western parts of the state and thereafter from the north-west to the south-east, joining at Allahabad.

History. Uttar Pradesh has a very ancient and colourful history. Although the state does not find mention in the Rig Veda, it is recognised in the later vedic age as Brahmarshi Desa or Madhya Desa. Many of the great sages of the Vedic times like Bharadwaja, Yajnavalkya, Vasishta, Viswamitra and Valmiki appear to have flourished in U.P. Many sacred books of the Aryans were also composed here. Varsha Purana, for example, is associated with Mathura.

The two great epics of India, the Ramayana and the Mahabharata, appear to have been inspired by U.P. The Ramayana features the royal family of Kosala and the Mahabharata centres round the royal family at Hastinapura, both in Uttar Pradesh.

In the 6th century BC, UP was associated with two new religions, Jainism and Buddhism. Mahavira, the founder of Jainism, is said to have breathed his last at Doora in U.P. It was at Saranath, again in U.P., that the great Buddha preached his first sermon and laid the foundations of his order. In the post-Buddhist perod several centres in UP, like Ayodhya, Prayag, Varanasi and Mathura became reputed centres of learning. Sri Sankaracharya, the great Hindu reformer established one of his ashrams at Badrinath in U.P.

In the mediaeval period UP passed under Muslim rule and led the way to a new synthesis of Hindu and Islamic cultures. Ramananda and his Muslim disciple Kabir, Tulasidas and Birbal and many other intellectuals contributed to the growth of Hindi and Urdu. Urdu remains the perfect synthesis of Hindu and Muslim cultures.

Uttar Pradesh kept up its intellectual leadership under the British administration. The British combined Agra and Oudh into one province called the United Provinces of Agra and Oudh. The name was shortened to United Provinces in 1935. After independence in January, 1950, the United Province was renamed Uttar Pradesh.

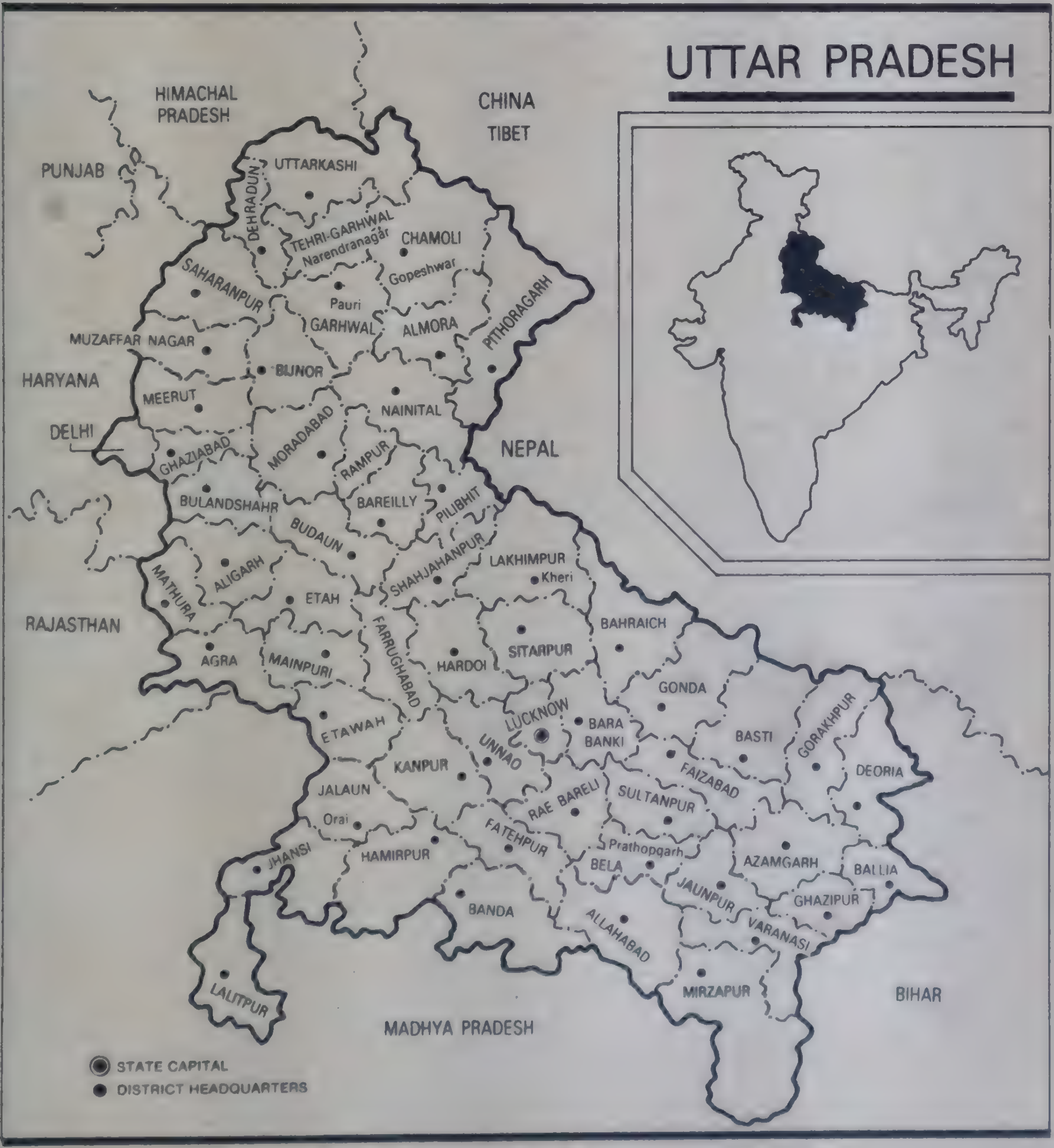
Administration. The state has a bicameral legislature—the Legislative Assembly and the Legislative Council.

The state is divided into 57 districts as under: Kanpur district was bifurcated into Kanpur (Urban) and Kanpur (Rural) districts with effect from April 23, 1981.

Districts

Sl. No.	Districts	Area (sq. km.)	Population (1981 census	Head-quarters
1.	Agra	4,805	28,52,942	Agra
2.	Aligarh	5,019	25,74,925	Aligarh
3.	Allahabad	7,261	37,97,033	Allahabad
4.	Almora	5,385	7,57,373	Almora
5.	Azamgarh	5,740	35,44,130	Azamgarh
6.	Bahraich	6,877	22,16,245	Bahraich
7.	Ballia	3,189	19,45,376	Ballia
8.	Banda	7,624	15,33,990	Banda
9.	Bara-Banki	4,401	19,92,074	Bara-Banki
10.	Bareilly	4,120	22,73,030	Bareilly
11.	Basti	7,228	35,78,069	Basti
12.	Bijnor	4,848	19,39,261	Bijnor
13.	Budaun	5,168	19,71,946	Budaun
14.	Bulandshahr	4,352	23,58,270	Bulandshahr

15.	Chamoli	9,125	3,64,346	Chamoli
16.	Dehra Dun	3,088	7,61,668	Dehra Dun
17.	Deoria	5,445	34,96,564	Deoria
18.	Etah	4,446	18,58,692	Etah
19.	Etawah	4,326	17,42,651	Etawah
20.	Faizabad	4,511	23,82,515	Faizabad
21.	Farrukhabad	4,274	19,49,137	Fatehgarh
22.	Fatehpur	4,152	15,72,421	Fatehpur
23.	Garhwal	5,440	6,37,877	Pauri
24.	Ghazipur	3,377	19,44,669	Ghazipur
25.	Ghaziabad	2,590	18,43,130	Ghaziabad
26.	Gonda	7,352	28,34,562	Gonda
27.	Gorakhpur	6,272	37,95,701	Gorakhpur
28.	Hamirpur	7,165	11,94,168	Hamirpur
29.	Hardoi	5,986	22,74,929	Hardoi
30.	Jalaun	4,565	9,86,238	Orai
31.	Jaunpur	4,038	25,32,734	Jaunpur
32.	Jhansi	5,024	11,37,031	Jhansi
33.	Kanpur (Rural)	5,848	20,08,731	Kanpur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DEHRADUN
TEHRI-GARHWAL
Narendranagar
CHAMOLI
Gopeshwar
SAHARANPUR
Pauri
GARHWAL
ALMORA
PITHORAGARH
MUZAFFAR NAGAR
BIJNOR
MEERUT
NAINITAL
GHAZIABAD
MORADABAD
RAMPUR
BULANDSHAHR
BAREILLY
PILIBHIT
BUDAUN
SHAHJAHANPUR
LAKHIMPUR
Kheri
ALIGARH
MATHURA
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BAHRAICH
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56. Uttarkashi	8,016	1,90,948	Uttarkashi
57. Varanasi	5,091	37,01,006	Varanasi
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Among cash crops, production of rapeseed and mustard was more than 8.11 lakh tonnes. The state produces about one-half of the total sugarcane output in the country. During 1983-84, the production of sesasum was 78.4 thousand tonnes and linseed, 74.6 thousand tonnes in the state. During the year, the state produced 81.4 thousand bales of jute.

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Handloom industry meets nearly one-third of the total requirement of cloth in the state. During the year 1984-85, the production of handloom cloth was 600 million metres.

A sizing plant with an intake capacity of 0.58 million kilograms is being set up at Kashipur, costing Rs. 2.75 million. Five spinning mills, having a total of 25,000 spindles, are being set up, with an expenditure of Rs. 520 million. Besides, seven new co-operative spinning mills are being set up, involving an expenditure of Rs. 617 million. These units are likely to provide employment to 7,000 persons.

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WEST BENGAL

Area 87,853 sq.km; **Capital:** Calcutta; **Population:** 54580647; **Language:** Bengali; **Literacy:** 40.9449%.

West Bengal covers the bottleneck of India in the east, stretching from the Himalayas in the north to the Bay of Bengal in the south. It is bounded on the north by Sikkim and Bhutan, on the east by Assam and Bangladesh, on the south by the Bay of Bengal and on the west by Orissa, Bihar and Nepal.

Physiography. West Bengal has two natural divisions, the Himalayan north comprising the districts of Darjeeling, Jalpaiguri and Cooch Behar and the alluvial plain that lies south of it. Darjeeling, the nothernmost district has a maximum elevation of 3658 m above the sea level. The Jalpaiguri and Cooch Behar districts are low-lying areas watered by swift-flowing rivers like the Tista, the Torsa, the Jaldhaka and the Ranjit. The southern part is a thickly populated level expanse of rice fields, dotted with mango, cocount and banana gardens. This vast alluvial plain is the handiwork of many big rivers, the chief of which are the Bhagirathi and its tributaries— the Mayurakshi, the Damodar, the Kangsabati, and the Rupnarayan. The Bhagirathi, called Hooghly in its lower reaches, is itself a branch of the Ganga and provides Calcutta its link with the sea.

The entire state belongs of the high rainfall region. Rainfall varies from 120 cm in the south western region to 400 cm in the northern region. The normal rainfall for the state as a whole is around 175 cm.

History. The old Bengal (of which W. Bengal forms a part) known as Gauda or Vanga in ancient Sanskrit literature appears to have been celebrated from the epic period. The Mahabharata refers to the King of Vanga as an ally of the Kauravas in their war against the Pandavas. Apparently at the time of Aryan penetration into the east, Vanga had a well-settled civilization and culture.

In the 3rd century B.C Bengal was part of the Mauryan Empire and from the 4th to the 6th centuries. A.D., it was under the Gupta dynasty. By about A.D. 800, Bengal had its own dynasty of independent kings, the Palas. The Palas were very powerful and expanded their territories into the neighbouring countries of Bihar, Orissa and Assam.

At the height of their power they had diplomatic relations with the Indonesian king Sri Vijaya. In the 11th century, Bengal passed under the rule of a new dynasty, the Senas. The Senas who ruled from their capital at Nadia were driven out by Qutbud Din, the Sultan of Delhi.

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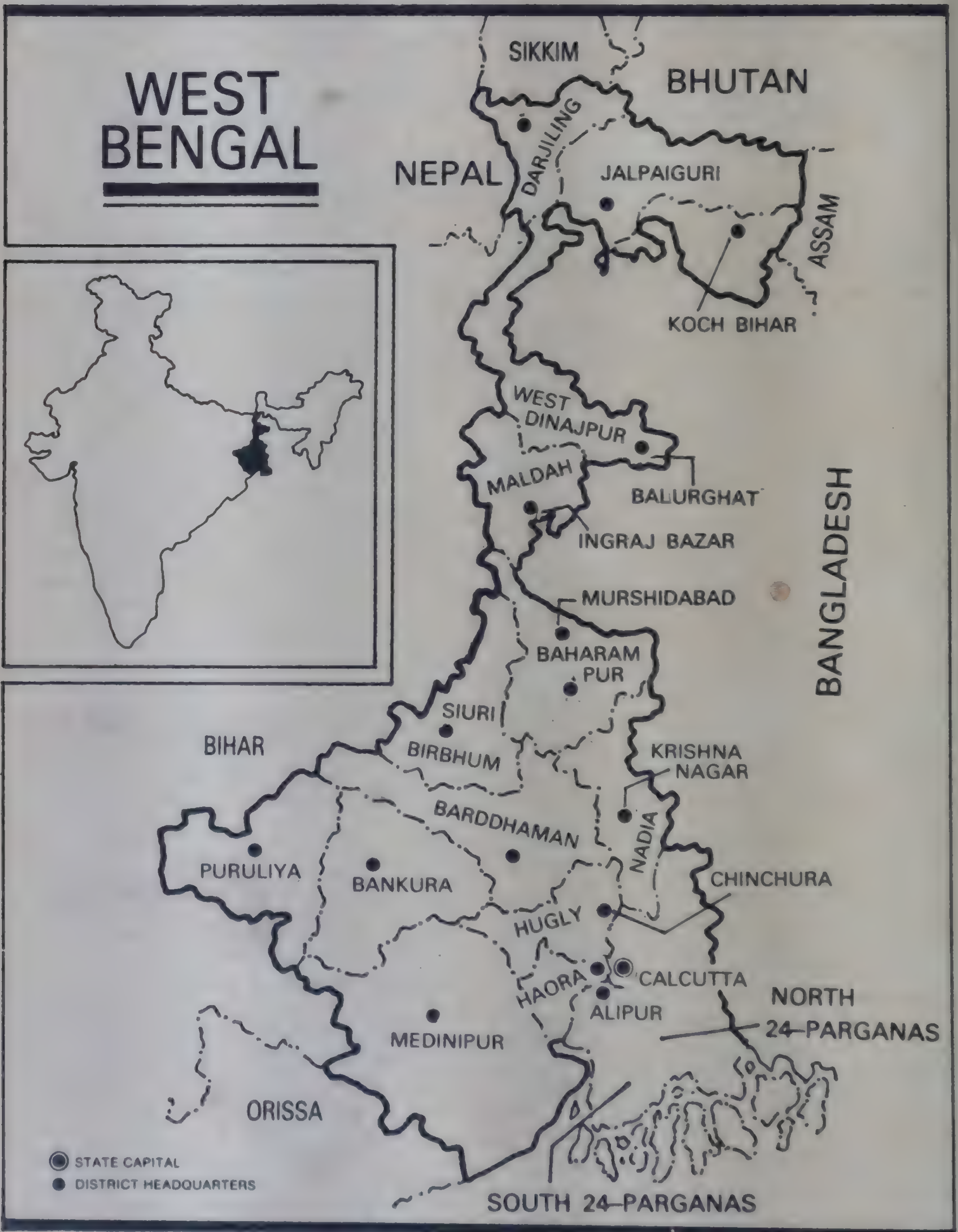
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HUGLY
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CALCUTTA
ALIPUR
NORTH 24–PARGANAS
MEDINIPUR
ORISSA
SOUTH 24–PARGANAS
STATE CAPITAL
DISTRICT HEADQUARTERS

partition as an attempt at disintergrating Bengal. The rest of India stood by Bengal and troubles broke out

Peace was restored in 1911,when the partition was abrogated by a declaration of King George V at the Royal Durbar in Delhi. Another change announced at the Durbar was the shifting of the capital from Calcutta to

Delhi. The new Bengal did not include Assam or Bihar. It was a compact area of over 200,500 sq.km.

When India became independent in 1947, Bengal was partitioned between India and Pakistan. While Pakistan's share came to be called East Pakistan, India's share was called West Bengal. In 1950 the Princely State of Cooch Behar was merged into West Bengal. The former French enclave of Chandranagore was added on Oct. 2,1954. Under the States Reorganisation Act, some parts of Bihar were transferred to Bengal.

Administration. The legislature is unicameral—the Legisaltive Assembly. The State is divided into 17 districts.

Districts

District	Area in (sq. km)	Population	Headquarters
Bankura	6881	2374815	Bankura
Birbhum	4550	2095829	Suri
Bardhaman	7028	4835388	Burdwan
Calcutta	104	3305006	Calcutta
Cooch Behar	3386	1771643	Cooch Behar
Darjeeling	3075	1024269	Darjeeling
Hooghly	3145	3557306	Chinsurah
Howrah	1474	2966861	Howrah
Jalpaiguri	6245	2214871	Jalpaiguri
Malda	3713	2031871	English Bazar
Midanpore	14081	6742796	Midnapore
Murshidabad	5341	3697552	Berhampore
Nadia	3927	2964253	Krishnagore
Purulia	6259	1853802	Purulia
North 24-Parganas	14136	10739439	Barasat
South 24-Parganas	5206	2404947	Alipore
W. Dinajpore			Balurghat
Total		54580647	

The three-tiered panchayat system is with 3242 Gram Panchayats at base, 339 Panchayat Samities at the Community Block (intermediate) level and 15 Zilla (district) Parishads at the apex. The last Panchayat election took place in May, 1983. Total number of seats at different levels stands at 55,495. The Panchayat institution acts as agencies for implementing development programmes.

State of Economy. West Bengal ranks second in rice production and fourth in national foodgrain production. Rice is one of the principal crops in West Bengal. It occupies 5,198.5 thousand hectares out of the total cultivated area of the State. The State alone accounts for 6.1% of the country's total foodgrain production of the country (1983-84).

Among cash crops jute, mesta and tea dominate. West Bengal produces 55.0% of India's jute and mesta and 24.0% of tea and 25% of All-India production of potato is produced in West Bengal alone.

Oilseeds cover 392.8 thousand hectares of the area under principal crops and contribute 17.4% of All-India production. Home production only meets a fraction of the State's requirements. Much of this commodity is imported from nearby states.

The left Front Government of West Bengal launched a special programme called "Operation Barga" for ensuring the rights of share-croppers through recording the name of Bargadars. The work of 'Operation Barga' is in progress along with normal settlement work. With the active help from the panchayats the State Governmet could distribute 8.03 lakh acres of vested land upto March, 1985, About 16.14 lakh people received the land among which about 56 per cent belonged to the scheduled castes and scheduled tribes.

The production of coal in the State showed a little decline from 19823.0 thousand tonnes in 1982 to 18,728.0 tonnes in 1983. This improvement could have been more if power supply to the Eastern Coal Ltd. (which covers most of the coal mines in West Bengal) had been better.

Tourist Centres. Calcutta, until 1912, was the capital of the Government of India. Now, of course, it is the commercial capital of the north-eastern States of India. It is the centre of the great industries like jute, tea, hides and skins, coal and lac. Places of interest are Victoria Memorial (Picture Gallery and Museum), Indian Museum, Zoological Gardens, the Jain Temple, the Kalighat Temple, Belvedere House (Originally the residence of British Viceroys when they visited Calcutta, now turned into the National Library), Raj Bhavan (Official residence of the State Governor), Marble Palace, Eden Gardens, Dalhousie Square (now renamed as the Binoy-Badal-Dinesh Bagh), Dakhineywar Temple and Howarh Bridge.

Darjeeling is on the Great Himalayan slope and is one of the famous hill stations of India. It is 592 km north to Calcutta. Places of interest are Government House, Town Hall, Museum, Observatory Hill, Botanical Gardens, Birch Hill Park, Tiger Hill, Senchal Lake and Ghoom Monastery.

Santiniketan (District: Birbhum), located at a distance of 145 km from Calcutta, is the seat of the famous Viswa Bharati University founded by the late Rabindranath Tagore.

Digha, the most popular beach resort is in Midnapur district. It is 243 km from Calcutta and directly connected by road.

Sunderbans in South Calcutta near the Bay of Bengal is the largest delta forest in the world. This area, criss-crossed with thousands of canals, has abundance of materials of interest for the tourist and wild life enthusiasts.

Governor: Prof. Saiyid Nured Husan. **Chief Minister**: Jyoti Basu (CPM).

UNION TERRITORIES

1981 Census

Territory	Population	Density (per sq.km)	Sex Ratio**	Literacy (percentage)
Andaman & Nicobar Islands	188,741 (29)*	23 (28)*	760 (31)*	51.27 (8)*
Chandigarh	451,610 (27)	3961 (2)	769 (30)	64.68 (2)
Dadra & Nagar Haveli	103,676 (30)	211 (14)	974 (9)	26.60 26)
Delhi	6,220,406 (16)	4194 (1)	808 (29)	61.06 (3)
Goa, Daman & Diu	1,086,730 (22)	285 (12)	981 (5)	55.86 (5)
Lakshadweep	40,249 (31)	1258 (3)	975 (7)	54.72 (6)
Pondicherry	604,471 (25)	1229 (4)	985 (3)	54.23 (7)
All India	685,184,692	216	933	36.03

** Sex Ratio is the number of women per 1000 men. Only Kerala among States & Union Territories has 1034 women/1000 men. All others have below 1000 women/1000 men.

* Brackets indicates ranking among States & Territories.

ANDAMAN AND NICOBAR

Area: 8249 sq.km; **Capital**: Port Blair; **Population**: 188741; **Languages**: Bengali, Hindi, Nicobarese, Tamil & Malayalam. **Literacy**: 51.27%.

Andaman and Nicobar Islands are a group of more than 300 islands, the great majority of which (about 265) are uninhabited being too small and with little or no water. This group of islands in the Bay of Bengal may be considered the counterpart of the Lakshadweep Islands in the Arabian sea—both of them being the overseas possessions of the Indian Union.

Physiography. Andaman and Nicobar Islands are continental islands lying between 6 and 14 degree north latitute and 92 and 94 degree east longitude. They form two broad groups—Andamans and Nicobars which are separated by the 10 degree channel which is about 145 km wide and 400 fathoms deep. Geologically the islands appear to have been part of the land mass of south east Asia comprising north east India, Burma, Thailand, Malaysia and Indonesia.

It is thought that Andamans and Nicobars are the remnants of two vast mountain ranges which, at one time, stretched from Arrakan in Burma (Cape Negrias) to Sumatra (Achin Head) in Indonesia.

Port Blair, the headquarters of the Islands, is 1255 km form Calcutta (by sea), 1191 km from Madras and 580 km from Rangoon.

The Andaman Group has, at the extreme north, Land Fall Island which is about 900 km away from the mouth of the Hooghly river and about 190 km from Burma. This Island is followed by the three main islands, North Andaman, Middle Andaman and South Andaman—all of them separated from each other by shallow seas. This area is known as Great Andaman. Further south, at a distance of about 100 km from Port Blair, lies Little Andaman Island. Besides these, there is a large number of other islands in the group, many of them very small in size.

The Nicobar Group lying south of the Andamans extends from 6° to 10° north latitude. The northernmost island is Car Nicobar which lies about 120 km to the south of Little Andaman and the southernmost island is Great Nicobar barely about 150 km from Sumatra. Pygmalion Point also known as Parsons Point which has since been renamed as "Indira Point" is the southernmost tip of India and not "Kanyakumari" as is popularly known.

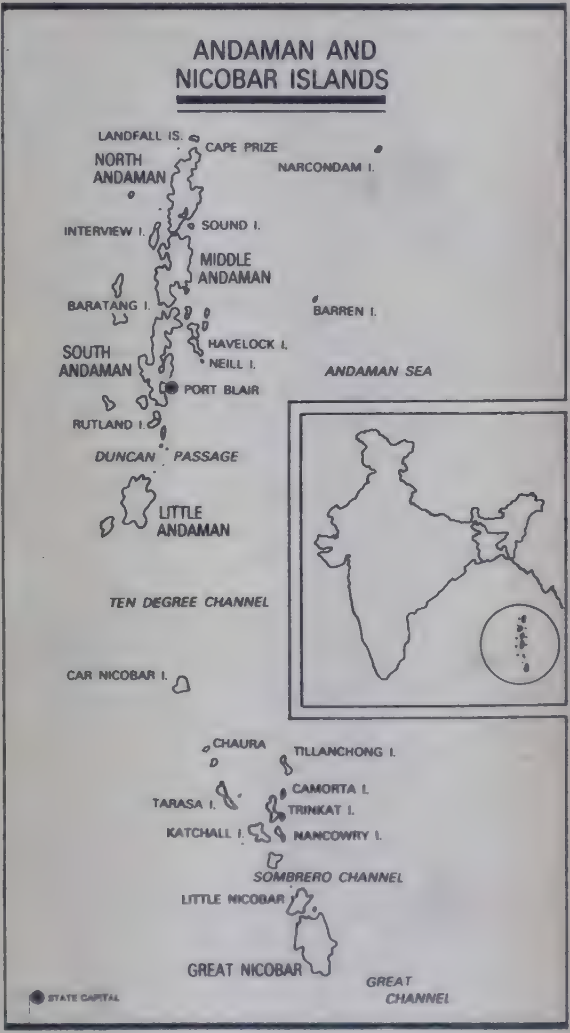
The important islands in this group are Great Nicobar, Car Nicobar, Chowra, Teressa, Nancowrie, Katchal and Little Nicobar.

The total area of the two groups of islands is 8249 sq.km of which Andamans with 6340 sq.km account for more than 76 per cent of the land area.

The total area of the Nicobar group of islands is 1953 sq.km, the length and width being about 260 km and 58 km respectively. In this group, the Great Nicobar has the largest area of about 1045 sq.km.

The climate of Andaman & Nicobar Islands is of the tropical type but the continuous breezes blowing in from the surrounding seas make it most pleasant.

History. The Andaman and Nicobar Islands, also known as the Bay Islands, had little historical importance till the advent of the European powers into India and the East in the 16th century. The Portuguese who came first were not particularly interested in these islands but they were interested in the East Indies. The Dutch who came next drove the Portuguese from the East Indies and the Bay Islands naturally came into their domain. Meanwhile, the British who had established themselves in India came into conflict with the Dutch in and round the Andamans. It did not take long for the British to drive out the Dutch and occupy the islands.


ANDAMAN AND NICOBAR ISLANDS
LANDFALL IS.
CAPE PRIZE
NORTH ANDAMAN
NARCONDAM I.
INTERVIEW I.
SOUND I.
MIDDLE ANDAMAN
BARATANG I.
BARREN I.
HAVELOCK I.
NEILL I.
SOUTH ANDAMAN
PORT BLAIR
ANDAMAN SEA
RUTLAND I.
DUNCAN PASSAGE
LITTLE ANDAMAN
TEN DEGREE CHANNEL
CAR NICOBAR I.
CHAURA
TILLANCHONG I.
TARASA I.
CAMORTA I.
TRINKAT I.
KATCHALL I.
NANCOWRY I.
SOMBRERO CHANNEL
LITTLE NICOBAR
GREAT NICOBAR
GREAT CHANNEL
STATE CAPITAL

The first settlement was established in North Andamans in the year 1789. Attempts at colonisation were ultimately given up but the penal settlement survived. The occasion came with the Revolt of 1857.

The British found that they had on their hands a large number of rebel convicts whom the Indian prisons of those days would hardly contain. the Andamans offered a ready-made solution. It is estimated that between 1858 and 1860 some 2000-4000 sepoy mutineers were sent to the Andamans. Many of them died under agonising circumstances.

With the British occupation of the Islands, contacts with the mainland of India grew.

The Tribals of Andaman

There are 6 primitive tribes in the Andaman and Nicobar Islands of which 4 belong to the Negrito stock viz. the Andamanese, the Onges, the Jarawas and the Sentinalese and 2 of the Mongoloid origin, viz., the Nicobarese and the Shompens. Of these, the Nicobarese and the Shompens live in the Nicobar District and the 4 other tribes are found in the Andaman District. The Nicobarese are a very thriving tribe and their population now is 22,000.

The Shompens are estimated to be more than 214. Of the primitive tribes, the Andamanese (28) and the Onges (97) are very friendly with the civilization. Periodic contacts with the Jarawas are being made and the last such contact was made on the 30th October, 1985.

When the contact team led by the Lt. Governor, M.L. Kampani, visited them at Lakra Lungha in Foul Bay (Middle Andaman), a batch of 96 Jarawas including men, women and children were present to greet the Lt. Governor and the team. They are no longer hostile to the civilization although they are not very much inclined to accept the modern way of life.

Contact with the Sentinalese is also being made and the last such contact was made on 5th November, 1985. Through gestures, they seem to show signs that they are no longer hostile, as they have been painted to be.

The Administration has settled the Great Andamanese in Strait Island, a small area (6 sq.km) off the eastern coast of Middle Andaman. The Jarawas inhabit a reserved forest of about 648 sq.km. on the western coast of South and Middle Andaman.

The Sentinalese are the sole inhabitants of North Sentinal Island with an area of about 47 sq.km south west of Port Blair.

The Onges live in Little Andaman with an area of 751 sq.km. Until recently it was the exclusive home of the Onges, but now it has been opened up for settlement by others.

The Jarawas and the Sentinalese live in active isolation and are not so friendly dispossed towards the outsiders. The problem the primitive tribes are facing is one of survival. While some of the primitive tribes have shown inclination to accept the modern way of life, others are yet to show them. However, there is a definite trend to indicate that they want to compromise with the civilization for the sake of their own survival.

Many Indian traders, especially from the west coast of India, established themselves as traders in the islands. Christianity also spread.

The Cellular Jail. Meanwhile, a radical change occurred in the penal system in the Andamans. At first, the prisoners were confined in barracks for the night. This system was replaced by the Cellular Jail. Here, each prisoner was confined to a cell at night. The construction of the Cellular Jail was taken up in 1896. The construction itself was carried out by convicts. By 1897 four hundred cells were built. In 1906, all the 7 wings of the jail containing 663 cells were completed. The prisoners, who were depored to the Andamans, were all political prisoners of one sort or another.

The constitutional reforms of 1935 necessitated a thorough revision of policy. In Sept. 1937, the first batch of prisoners left the Andamans and by Jan. 1938 all prisoners were released.

The Second World War and the consequent Japanese occupation of these islands from 1942-1945 brought the islanders a taste of foreign military occupation. After the evacuation of the Japanese in 1945, the islands, as part of India, became free on August, 15, 1947.

a2 One beneficial result of the the Japanese occupation was the expulsion of the Indian traders, who had ruthlessly exploited the ignorant islanders. They had either fled from the islands or were killed during Japanese occupation.

After independence, the Government of India was keen that mainland traders did not return to exploit the people and destroy their culture. The Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Act was passed in 1956, under which entry into tribal areas was prohibited and no outsider could carry on trade or industry in the islands, without the licence of the Administrator. Since 1938, refugees and ex-servicemen were permitted and encouraged to settle down in the islands. Many of them have now become permanent settlers.

On November 1, 1956 the Andaman and Nicobar Islands were constituted into a Union Territory, administered by the President of India. The local administration is headed by a Lt. Governor from November 1982 onwards with his headquarters at Port Blair. In 1979 in response to a national demand, the former Prime Minister Morarji Desai dedicated the Cellutar Jail as a National Memorial.

Administration. The entire territory is delimited into 4 Sub Divisions and 7 tehsils as follows:—

Area, Sub Divisions, Tehsils

Sub Division	Tehsils in the Sub division	(in sq.km) Area
1. Mayabunder	1. Diglipur	884
	2. Mayabunder	1348
	3. Rangat	1098
2. South Andaman	1. Port Blair	
	2. Ferrargunj	3010
3. Car Nicobar	1. Caar Nicobar	129
4. Nancowrie	1. Nancowrie	1824

State of Economy. The principal crops of Andaman and Nicobar Islands are rice, coconuts and arecanut. But the unscientific cultivation of these crops calls for radical improvements. Other crops are sugar-cane, pulses, fruit and vegetables. Recently it has been found that the climate is suitable for spices and rubber. Both are being tried out on the islands on a large scale.

Industries comprise saw milling, oil milling, plywood and matches. A number of training-cum-production centres have been started by the government.

Tourist Centres. Old Cellular Jail which has been declared a national monument, Anthropological Museum, Mount Harriet.

Lt. Governor: Lt. Gen. (Rtd) T.S. Oberoi.

CHANDIGARH

Chandigarh which has been a Union Territory since 1966 is becoming part of the Punjab state according to the Punjab Agreement. It was the capital city of both Punjab and Haryana where the High Court and University for both states were located. A planned modern city, it was designed by the French architect Le Corbusier.

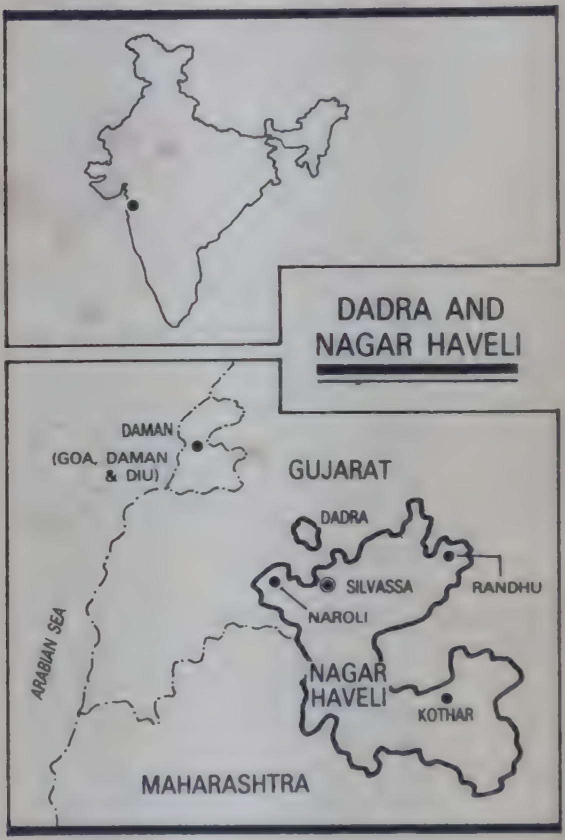
In 1981 census Chandigarh showed a population of 451610. Its area is 114 sq.km.

DADRA AND NAGAR HAVELI

Area: 491 sq.km; **Capital:** Silvassa; **Population:** 1,03,676; **Languages:** Bhili, Bhilodi, Gujarati and Hindi. **Literacy:** 26.6%.

Dadra and Nagar Haveli lies near the West Coast surrounded by the states of Gujarat and Maharashtra. It consists of two pockets namely Dadra and Nagar Haveli and these two pockets are intercepted by the territory of Gujarat.

History. The territory of Dadra and Nagar Haveli was originally assigned to the Portuguese by the Maratha government in 1779 for an aggregated revenue of Rs.12,000/- in return for their friendship. The Portuguese ruled this territory till its liberation in 1954. After liberation, the administration was carried on by an Administrator chosen by the people themselves.



Probably this is the only part of the country which was ruled by the people themselves for about 8 years (1954 to 1961). On the 11th August, 1961, the territory was integrated into the Indian Union.

Administration. The territory is under the control of an Administrator. The first group Panchayats at the village level were established in 1968 and thereafter elections are being held regularly every four years.

State of Economy. Agriculture is the principal occupation of adivasis who represent 79 per cent of the total population as per 1981 Census. Paddy, ragi, pulses and fruits are the major crops while wheat, vegetables and sugarcane are also cultivated. About 22,800 hectares of land is under cultivation. The Department of Agriculture has taken up several schemes to explore the production potential of this area. Area under high yielding varieties has increased from 5951 hectares in 1983-84 to 6715 hectares during 1984-85. A number of new commercial crop varieties were introduced. 96 per cent of the area is under dry land farming. Hence, dry farming technology is used to get top yield by tapping rain water.

There are no major industries. Two industrial estates, one at Silvassa on cooperative basis and the other government - owned Industrial Estate at Masat have been established. A new industrial estate at Khadoli is coming up. No. of industrial units with permanent registration increased to 197 by the end of March '85. All together 187 units (including medium scale units and 30 cottage village industries) are functioning generating employment for 5700 persons.

The products manufactured include spectacle frames and flooring tiles, buckets, bread & biscuits, furniture, katha and tenin, spun pipes, plastic moulded articles, chemicals, detergent powder, art silk fabrics, electrical fixtures, watches, candles, tin containers, chappals, rexine cloth, foam, etc.

Administrator: Dr. Gopal Singh.

Collector: S.M.S. Chaudhary.

DELHI

Area: 1,483 sq.km.; **Capital:** Delhi; **Population:** 62,20,406; **Languages:** Hindi, Punjabi and Urdu; **Literacy:** 61.54%.

The territory of Delhi shines with the reflected glory of a metropolis that functions as the capital of India. But beyond the confines of the metropolis and shorn of its imperial associations, this territory is much better and greener than any other territory of India.

Physiography. The territory forms an enclave inside the eastern frontier of Haryana in North India. The climate of the territory is influenced by its inland position with the desert of Rajasthan to the west and south-west and Gangetic plains of U.P. to the east. Extreme dryness with an intensely hot summer and cold winter are the characteristics of the climate. The year can broadly be divided into four seasons. The cold season starts in late November and extends to about the beginning of March. This is followed by the hot season which lasts till about the end of June when the monsoon arrives. The monsoon continues into the last week of September. The two post-monsoon months October and November constitute a transition period from the monsoon to winter conditions.

History. The city of Delhi was founded in the 11th century A.D. by a Rajput Chieftain of the Tomara clan. The Chauhans obtained possession of the city from the Tomaras. Prithvi Raj, the Chauhan ruler of Ajmer and Delhi, made the city of Delhi famous by his heroic valour and romantic adventures. Delhi under Prithvi Raj and Kanauj under Jai Chand were the principal kingdoms of north India at the time.

The first invasion of India by Muhammud Ghori was beaten back by Prithvi Raj in the first battle of Tarain in 1191. Next year, Ghori came back to avenge his defeat and in the second battle of Tarain (1192) the Rajput army was routed. Prithvi Raj was captured and put to death. Delhi thus passed into the hands of Muslim rulers for the next six centuries. Under the Mughal Emperors, Delhi became a world famous city.

In 1857, following the mutiny of Indian troops, the British deposed the titular Emperor Bahadur Shah and formally annexed Delhi. In 1912, the capital of British India was transferred from Calcutta to Delhi. A new city—New Delhi—of imposing dimensions was laid out by the side of the old city—Old Delhi— by the British Indian Government. Independent India has retained this historic capital.

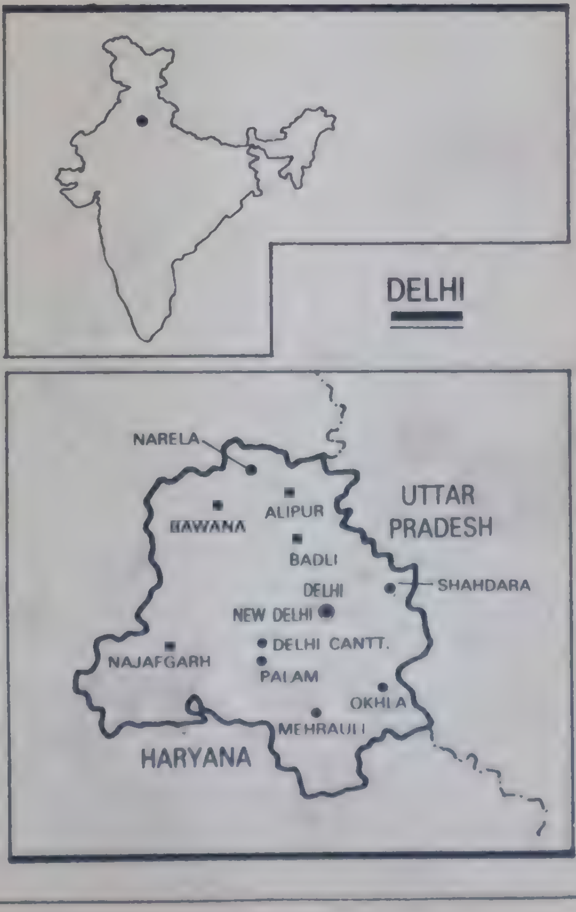
Administration. Delhi became a Union Territory on November 1, 1956. In order to enable a larger measure of association of the representatives of the people of the Union Territory with developmental activities, parliament enacted the Delhi Administration Act 1966. Under this Act, Delhi has an elected Metropolitan Council consisting of 61 members, five of whom are nominated by the President of India.

The Lt. Governor is the Administrator. He is assisted by 4 Executive Councillors (One Chief Executive Councillor and three Executive Councillors) appointed by the President of India on the recommendation of the Union Home Ministry.

The Territory is made up of three Census towns, Delhi, New Delhi and Delhi Cantt, and 214 villages. It is represented by 7 members in the Lok Sabha and 3 members in the Rajya Sabha. The territory is covered by 3 local bodies— Delhi Municipal Corporation, New Delhi Municipal Committee and Cantonment Board. The rural area of the territory falls within the jurisdiction of Municipal Corporation of Delhi.

Delhi Units.

Name	Urban/ Rural	Population 1981
New Delhi Municipal Committee	(Urban)	273036
Delhi Cantonment Board	(Urban)	85166
Municipal Corporation of Delhi	(Urban)	5409998
	(Rural)	452206
Total		6220406



State of Economy. In Delhi 31.93 per cent of the total population constitutes workers (1981 census). Percentage distribution of workers according to main activity revealed that cultivators constitute 1.93 per cent, agricultural labourers 0.86%, household industry 3.76% and other workers 93.45%.

Delhi ranks third in *literacy* after Kerala and Chandigarh which hold the first and second positions. Percentage of literacy in 1981 was 61.54 (68.40% males and 53.07% females.

Delhi has a total land area of 147488 ha. of which 1443 ha. area is forest and 70642 ha. is not available for cultivation. Other uncultivated land excluding fallow, comes to 4626 ha.

About 91757 ha. is cultivated. Chief crops in 1984-85 production (in 1000 tonnes), were: wheat 117, jowar and bajra 12, sugar cane (gur) 0.04.

Since 1974 a large number of industrial concerns have been established. These include factories for the manufacture of razor blades, sports goods and parts for radios, bycycle and station wagons, plastic and PVC goods including footwear. The number of industrial units functioning was about 62000 in 1984-85. The number of workers employed was 5,58,000, production was worth Rs.3300 crore and investment was about Rs.1200 crore.

Some traditional handicrafts for which Delhi was formerly famous, still flourish. Among them are ivory carving, miniature painting, gold and silver jewellery, etc. The handwoven textiles of Delhi are particularly fine, this craft having been successfully revived.

Tourist Centres. Since Delhi has been the Capital of India for centuries, it is full of rich monuments. Both the Delhis -the old city of the Mughals formed by Shah Jehan and the new city constructed by the British in 1931 -preserve centres of Tourist interest.

Among them are Rashtrapati Bhavan, Mughal Gardens, Parliament Buildings, Chandni Chauk, Red Fort, Juma Masjid, Raibat, Raj Ghat, Shantivana, Vijaya Ghat, Purana Kila (Indraprastham), Humayun's Tomb, Lodi Tomb, Qutb Minar, Haus Khas, Safdarjung's Tombs, Jantar Mantar and India Gate.

The Zoological Garden, Kashmiri Gate, India Gate, Birla Mandir, Vigyan Bhavan, National Museum, Cannaught Circus, Budha Jayanti park, Rabindra Rangsala and Nehru Memorial Museum are also of imprortance.

Besides, Agra, the city of Taj Mahal, Mathura of Srikrishna legends, Tuglagabad, Surajkund, Lakshmi Narayan Temple, Sohna, Sultanpur Lake, etc are also around.

Lt. Governor: Air Vice Marshal H.L. Kapoor. **Chief Executive Councillor:** Jag Parvesh Chandra.

GOA, DAMAN AND DIU

Area: 3814 sq.km; **Capital:** Panaji; **Population:** 10,86,730; **Languages:** Konkani, Marathi and Gujarati; **Literacy:** 55.86%.

Goa, Daman and Diu celebrated the silver jubilee of its existence under the Indian Union in 1985. These are three different landblocks on the West Coast of India lying far apart from one another. They have come to form one political unit after liberation from the erstwhile Portuguese regime and have been added as such to the Indian Union.

Physiography. Goa is situated between the coastal borders of the Karnataka and the Maharashtra States. It is bounded on the north by the Terekhol river, on the east and south, by the land boundaries of the Karnataka State and on the west by the Arabian Sea. While Daman lies on the Gujarat coast, Diu is an islet on the southern fringe of Kathiawar peninsula.

Goa is hilly terrain especially on its eastern side where lies the northern end of the Sahyadri range. The important rivers flowing westward and providing a network of internal waterways are Mandovi, Zuari, Terekhol, Chapora, and Betul, which are navigable for a total length of 253 km.

Daman is bounded on the north and south by the Bhagwan and the Kalem rivers respectively, on the east by the Gujarat State and on the west by the Arabian Sea.

Diu, a tiny islet in the Gulf of Cambay near Veraval Port is separated from the southern extremity of the Saurastra Peninsula by a narrow channel running through a swamp. The island is connected with the mainland by a narrow channel on the north.

The climate of Goa is warm and humid. There is little variation in temperature over the year. The normal rainfall varies from 2800 - 3500 mm. Daman has a mild and humid climate while Diu has a sultry climate.

History. Goa has been a very important historical and cultural centre since the earliest times. It was known as Gopakpattan or Gomant which figure in the Bhishma - Parva of the Mahabharata. It was also mentioned as Govapuri in the Suta-Samhita. Ptolemy, the great geographer (2nd century A.D) refers in his geography to Goa as "Gouba". Later on, during Kadamba times it was also known as Gopapuram or Gove.

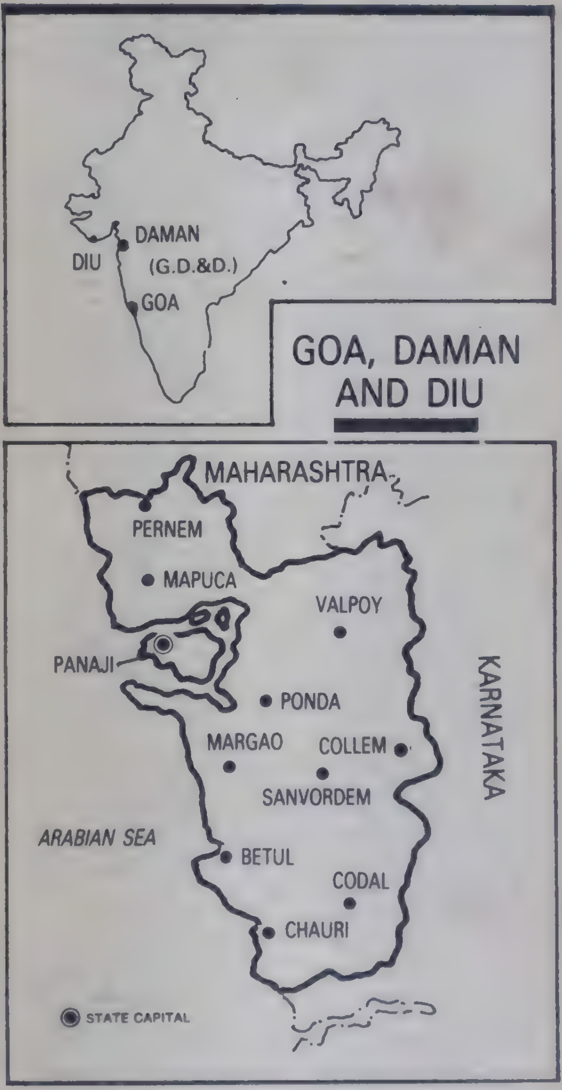
The earliest known history of the territory which included the adjoining lands of the neighbouring states, can be traced back from the Mauryas. Goa was under the Satavahanas from 2nd century B.C. and thereafter, under the sway of the western Kshatrapas from 150 A.D.

Chalukyas of Badami ruled over it for over 200 years since 540 A.D. After the fall of Badami Chalukyas, Rastrakutas dominated the area including Goa for over 220 years from 753 A.D. to 973 A.D.

Kadambas of Goa replaced them and put it under their sway from 1008 A.D. to 1300 A.D. when Goa turned out to be a great centre of marine trade. Thereafter, Goa came under the control of Yadavas of Devagiri, Delhi Sultans (1356 to 1378 A.D) and Vijayanagar Rulers (1378 to 1470 A.D), Bahamani Sultans of Deccan and later on Adilshahis of Bijapur (1470 to 1510 A.D).

In 1534, Diu off the southeast coast of Kathiawar (Gujarat) was occupied by the Portuguese. In 1559, Daman on the Gujarat coast, 70 miles from Bombay, was annexed by them, in 1560. Inquisition which was established in Goa, largely contributed to the downfall of the Portuguese empire in the East.

It continued till 1812 with a brief break of four years from 1774. The Portuguese made the city of Panaji as the capital of Goa in 1843. The Portuguese Territory of Goa, Daman and Diu was finally liberated on December 19, 1961.



Under the Constitution (Twelfth Amendment) Act 1962, Goa was included in the first schedule to the constitution as a territory of the Indian Union.

In 1966 Parliament enacted the Goa, Daman and Diu Opinion Poll Act. In accordance with the provisions of the Act, an Opinion poll was held in January 1967 to ascertain whether Goa, Daman and Diu wanted to be a Union Territory or to merge with the adjoining states of Maharashtra and Gujarat. Goa, Daman and Diu voted to continue as a Union Territory.

Administration. The Goa region has been declared as one district with a district magistrate, and two sub-divisions Panaji and

Margao and 11 Talukas. Daman and Diu have no subdivisions. The Daman region is under the charge of a Collector while Diu is under the charge of a Civil Administrator.

Districts

District	Area (sq.kms)	Population (1981) Census	Headquarters
Goa	3702.0	10,07,749	Panaji
Daman	72.0	48,560	Daman
Diu	40.0	30,421	Diu
Total	3,814.0	10,86,730	

State of Economy. Paddy is the staple crop of the Territory covering 53792 ha. (Covering double cropping, high yielding variety and local variety) of the total cropped paddy area 10,289 ha was under rabi and 43,503 ha under khariff during the year 1985–86.

Ragi is the next important food crop covering 8649 ha. Arrea covered by other cereals millets and pulses is 11,038 ha. Area covered under sugarcane cultivation during 1985–86 was 1606 ha.

Since the fourth five-year plan there been a steady growth in the number as as in the size of industries. The terr changed into an industrial economy. By end of March 1986, the size of the indus base assumed broad dimensions. There 29 large and medium units employing aro 9,000 persons covering a capital investm of more than Rs. 195 crore.

These include from iron ore pellets, cot yarn. IMF liquor pesticides, automob tyres, fertilizers, etc.

At the end of March 1986 the number registered small scale units increased to 3 employing 23,611 persons.

Tourist Centres. Goa is a picture que land full of scenic charm. Historic for churches and temples interspersed wi green hills, mountain, river creeks, fields ar palm-fringed pearl white beaches. Basilica Bom Jesus in Old Goa enshrines the sacre relics of St. Francies Xavier.

Panaji, Dona Paula, Gasper Dias beac Calangute beach, Colva beach, Arvale waterfalls, Vasco da Gama, Dudhsag waterfalls, Marmagao port etc. are amor the most sought after centres.

Lt. Governor: Dr. Gopal Singh; **Chi Minister:** Pratap Singh Rane (Congress).

LAKSHADWEEP

Area: 32 sq. km; **Capital:** Kavaratti; **Population:** 40,249; **Language:** Malayalam; **Literacy:** 55.06%.

The tiniest Union Territory of India, Lakshadweep is an archipelago consisting of 12 atolls, three reefs and five submerged banks. Of its 36 Islands covering an area of 32 sq. km, only 10 are inhabited. They are Andrott, Amini, Agatti, Bitra, Chetlat, Kadmat, Kalpeni, Kavaratti (Headquarters), Kiltan and Minicoy. Bitra is the smallest of all having only a population of 181 persons (1981).

Physiography. Lakshadweep lies about 220 to 440 km from the coastal city of Cochin in Kerala between 8° and 12° 13′ north latitude and 71° and 74° east longitude. Kavaratti is its headquarters. These Islands are linked with Cochin by ship, which takes about 10 to 20 hours.

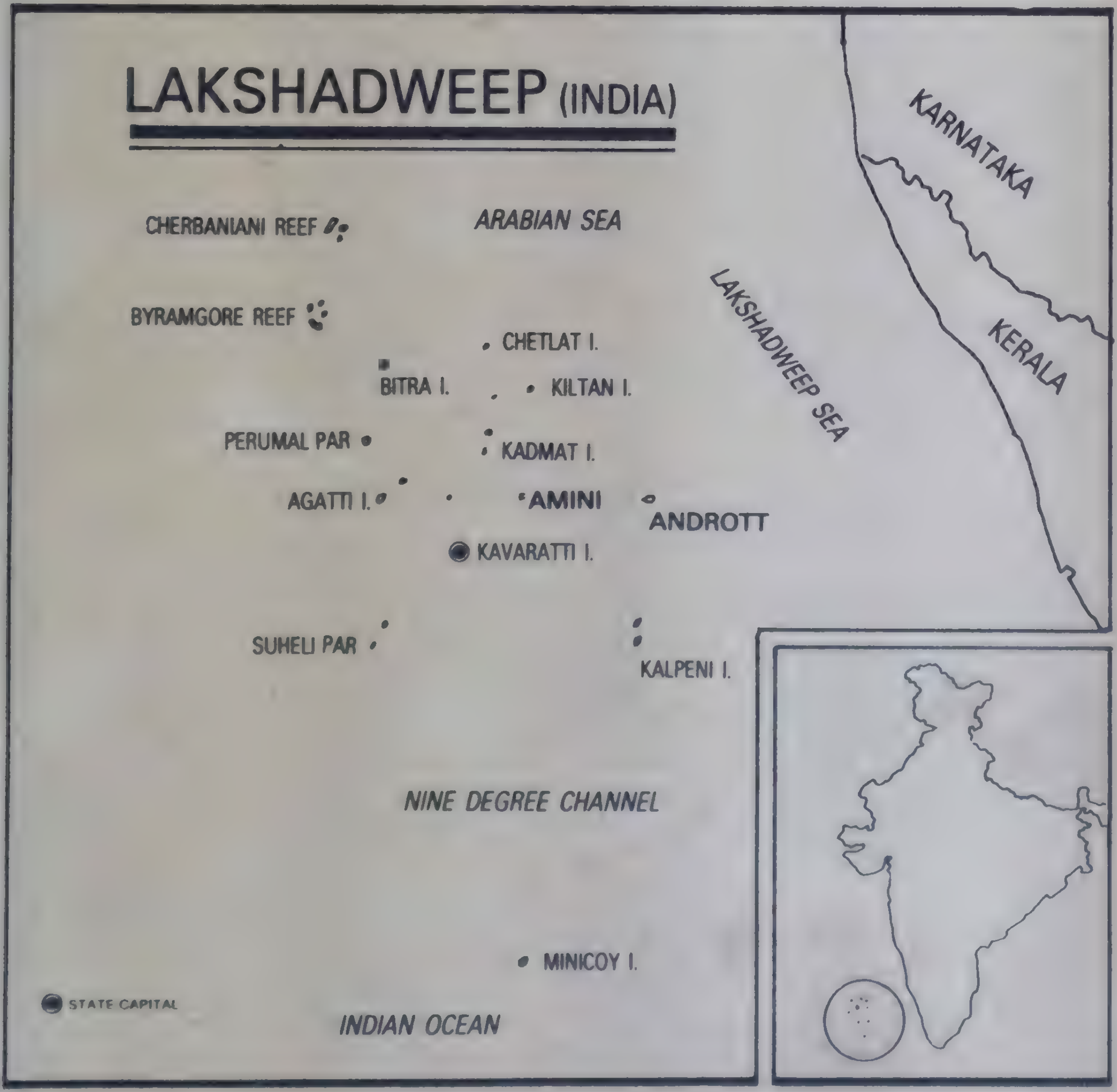
Though the land area is extremely small, we consider its lagoon area of about 4,200 s km 20,000 sq. km of territorial waters ar about seven lakh sq. km of economic zon Lakshadweep is one of the largest territori of our nation.

The flora of the Islands includes Banan Vazha (Musa Paradisiaca), Colocasia, Char bu (Colocassia antiquarum), Drumsti moringakki (Moringa Oleifera), Bread-fru Chakka (Artocarpus incisa), wild almo (Terminalia catappa) are grown extensive Some of the shrub jungle plants like kar (Scaevolakeenigii), Punna, (Calaphyllum ophyllum), Chavok (Casuarina equisetifoli Cheerani (Thespesia populnea), Fanthi, Fa and Murik are unevenly grown througho the Islands. Coconut, Thenga (Cac nucifera) is the only crop of economic i portance in Lakshadweep. These are fou in different varieties such as Laccadive micro, Laccadive ordinary, green dwarf, etc. Two different varieties of sea grass are seen adjacent to the beaches. They are known as Thalassia hemprichin and Cymodocea isoetifolia. They prevent sea erosion and movement of the beach sediments.

The marine life of the sea is quite elaborate and difficult to condense. The commonly seen vertebrates are cattle and poultry. Oceanic birds generally found in Lakshadweep are 'tharathasi' (Sterna fuscata) and 'karifetu' (Anous stolidus). They are generally found in one of the uninhabited Islands known as 'PITTI'. This Island has been declared a bird sanctuary.

History. Early history of Lakshadweep is unwritten. Local traditions attribute the first settlement on these Islands to the period of Cheraman Perumal, the last King of Kerala. It is believed that after his conversion to Islam, at the behest of some Arab merchants, he slipped out of his capital Cranganore, the present day Kodungalloor—an old harbour town near Cochin, for Mecca.

When his disappearance was discovered, search parties sped for the King in sailing


LAKSHADWEEP (INDIA)
CHERBANIANI REEF
ARABIAN SEA
KARNATAKA
BYRAMGORE REEF
LAKSHADWEEP SEA
CHETLAT I.
BITRA I.
KILTAN I.
KERALA
PERUMAL PAR
KADMAT I.
AGATTI I.
AMINI
ANDROTT
KAVARATTI I.
SUHELI PAR
KALPENI I.
NINE DEGREE CHANNEL
MINICOY I.
STATE CAPITAL
INDIAN OCEAN

boats and left for the shores of Mecca, in search of the King from different places. It is believed that one of these sailing boats of Raja of Cannanore was struck by a fierce storm and they were shipwrecked. After being tossed for many days in the Arabian Sea, they finally landed on the Island now known as Bangaram. From there, they went to the nearby island of Agatti. Finally the weather improved and they returned to the Mainland sighting other islands on their way. It is said that after their return, another party of sailors and soldiers were sent who discovered the Island of Amini and started living there. It is believed that the people sent there were Hindus. Even now unmistakable Hindu social stratification has been existing in these Islands despite Islam.

There are communities who are primarily land owners (Koyas), sailors (Malmis) and cultivators (Melachens). Legends say that small settlements started in the Islands of Amini Kavaratti, Andrott and Kalpeni first and later people from these Islands moved to other Islands of Agatti, Kiltan, Chetlat and Kadmat. This legend of Cheraman Perumal is not, however, fully substantiated.

The advent of Islam dates back to the 7th century around the year 41 Hijra. Saint Ubaidulla is believed to have preached Islam to the islanders. The grave of Saint Ubaidulla in Andrott is today a sacred place. Preachers from Andrott are respected deeply in far off lands like Sri Lanka, Malaysia, Burma etc.

The arrival of the Portuguese in India again made Laccadives an important place for the seafarers. It was also the beginning of the year of plunder for the Islands. The finely spun coir was much sought after for ships. So the Portuguese started looting Island vessels. They forcibly landed at Amini to procure coir some time in the early 16th century, but it is said that the people killed all the invaders by poisoning. The Portuguese invasion ended thus.

Even after the conversion of the entire Islands to Islam, the sovereignty remained in the hands of the Hindu Rajah of Chirakkal for some years. From the hands of the Chirakkal Raja, the administration of the Islands was passed on to the Muslim house of Arakkal of Cannanore around the middle of the 16th century.

The Arakkal rule was oppressive unbearable. Some time in the year some Islanders from Amini took courage went to Tippu Sultan at Mangalore requested him to take over the Adminis tion of the Amini groups of Islands. Ti Sultan at that time was on friendly terms the Bibi of Arakkal and after deliberatio the Islands of Amini group were handed o to him. Thus the Islands suzerainty came be divided as five under the sovereignty the Tippu and the rest continued under Arakkal rule.

After the battle of Seringapattom in 18 Tippu Sultan handed over the Islands to t British East India Company and the Islan were administered from Mangalore. In 184 a severe cyclone hit the Island of Andrott a Raja of Chirakkal decided to visit the Isla in order to assess the damages and distributing relief.

An officer of the East India Company W. M. Robinson volunteered to accompa him. On reaching Andrott, the Rajah found difficult to meet all the demands of t people. Sir William then offered the Raja help him in the form of a loan. This w accepted. This arrangement continued about four years but when the loans starte mounting, the English asked the Rajah repay which he could not. In 1854 all t remaining Islands were handed over to t East India Company for administration. S came the British rule.

The Union Territory was formed in 19 and it was named Lakshadweep in 1973

Administration. Prior to the formatio of this Union Territory on 1 Nov. 56, thes Islands formed part of the erstwhile Madra State. The entire group of Islands is cons dered as one District and divided into fo Tahsils and put in charge of a Tahsildar, eac except Minicoy where the post of the Tahsi dar was abolished and a Deputy Collect appointed in August, 1978. The lowest re venue official in each Island was known 'Amin' in Laccadive group and Minicoy an 'Karani' in Amindivi group. Now they ar designated as 'Amin' in all Islands.

The Headquarters of the Administratio were shifted from Calicut (Kerala State) Kavaratti Island in March 1964. When th annual expenditure to be incurred by th

Administration went beyond Rs. 3 crore, the necessity for decentralisation of the departments was felt and accordingly new offices were created in 1972.

Area and Population

Islands (inhabited)	Area (sq. km)	Population (1981 census)
Minicoy	4.4	6,658
Kalpeni	2.3	3,543
Andrott	4.8	6,812
Agatti	2.7	4,111
Kavaratti	3.6	6,604
Ameni	2.6	5,367
Kadmat	3.1	3,114
Kiltan	1.6	2,375
Chetlath	1.0	1,484
Bitra	0.1	181
Total	26.2	40,249

State of Economy. Agriculture is the mainstay of Lakshadweep's economy. The staple products of the Territory are coconuts and coir. Coconut is the main crop occupying the entire cultivable area of 2785 ha. The total palm population is 0.64 million with 0.16 million bearing trees. The average production is 8078 nuts per ha. per year with an average yield of 58 nuts per palm which is definitely higher than the average production figures of major coconut producing countries.

Fruit plants like banana, papaya, guava, sapota and citrus varieties and drumstick plants are cultivated in the coconut gardens as inter-crops. Agricultural Demonstration Farms of the Administration in all islands supply vegetables to the people.

Multi-crop demonstration plots extending to a gross area of 260 ha. engaging 640 labourers are available in the islands.

The islands produce copra, coir, jaggery, vinegar and fish. Trade in coir is a monopoly of the Administration and is being carried on as a welfare measure on a no-profit-no-loss basis, by bartering rice for coir. The average copra produced is about 2500 tonnes per annum, of which 2000 tonnes is sold through Calicut and Mangalore markets.

The islands have immense potential for the development of fisheries. Two Boat Building Yards are engaged in construction of mechanised boats in Lakshadweep. Over 295 mechanised boats are under operation in Lakshadweep waters, of which 265 were issued to the fishermen under hire-purchase system at subsidised cost. Fish catch during a year is estimated at 3224 tonnes. The Canning factory at Minicoy processes the Tuna fish.

The main household industry is coir making. Six coir production-cum-demonstration centres are functioning one each at Kadmat, Kiltan, Chetlat, Ameni, Agatti and Andrott.

These centres produced 884 tonnes of improved variety thinner coir yarn during 1983-84. The mechanised decorticating units at Andrott, Kadmat, Ameni and Kavaratti extracted 136 tonnes brown fibre from dry coconut husk during 1983-84. The hoisery factory at Kalpeni produced 30450 vests during this period. The Handicraft Training Centres at Kavaratti and Kalpeni are continuing to impart training to local candidates in making coral flowers, sea-shell toys, coconut shell crafts, coir crafts etc. One Furniture-Makers' Industrial Co-operative Society and one Handicraft Industrial Co-operative Society are also functioning at Kavaratti. Two Coir Co-operative societies have been started at Ameni and Kalpeni with trained local women as members.

Tourist Centres. The Development of domestic as well as international tourism has immense potential. However, much could not be achieved till recently owing to the strict entry restriction imposed on visitors from the Mainland. Ministry of Home Affairs has now made some relaxation and as a result of this, international as well as domestic tourism has received a remarkable boost.

Already numerous infrastructural facilities have been created. A proposal for the construction of an air-strip at Agatti, near Bangaram is receiving active consideration at the Centre. Since the literacy rate in the Union Territory is one of the highest in the country, the level of educated unemployed can be kept under control by developing this sector. Society for Promotion of Recreational Tourism (SPORTS) is a society registered under the Societies Act, 1860.

Administrator. Jagdish Sagar.

PONDICHERRY

Area: 492 sq.km; **Capital:** Pondicherry; **Population:** 6,04,471; **Languages:** Tamil, Telugu, Malayalam, English and French; **Literacy:** 54.23%.

Physiograpghy. The Union Territory of Pondicherry encompasses an area of only 492 sq.km with Pondicherry town and its villages covering 293 sq.km surrounded by the Sourth Arcot District, Karaikal town and its villages covering 160 sq.km surrounded by Thanjavur District, Mahe and its villages covering 9 sq.km surrounded by the Kerala State, and Yanam covering 30 sq.km within the East Godavari District in Andhra Pradesh. While Pondicherry, the headquarters of the Union Territory, lies 162 km south of Madras and 22 km north of Cuddalore, Karaikal is about 150 km south of Pondicherry and Yanam about 840 km north-east of Pondicherry on the Andhra coast. Mahe lies almost parallel to Pondicherry, 653 km away on the West Coast.

The French first established their foothold in Pondicherry in 1674; Karaikal was obtained from the King of Tanjore in 1738. Mahe was made over to the French by the ruler of Badagara in 1721. Yanam came into their possession in 1731.

Pondicherry and its surrounding enclaves lie on the drainage basin of the Gingee river. Karaikal located in the fertile Cauvery delta is fed by the waters of Arasalar (running a distance of 11.97 km in the reigon), Natter (11.2 km), Vanjiar (9 km), Nular (13.77 km), Puravadaiyaran (5.3 km) Thirumalirayanar (5.13 km) and the Nandalar (15.15 km).

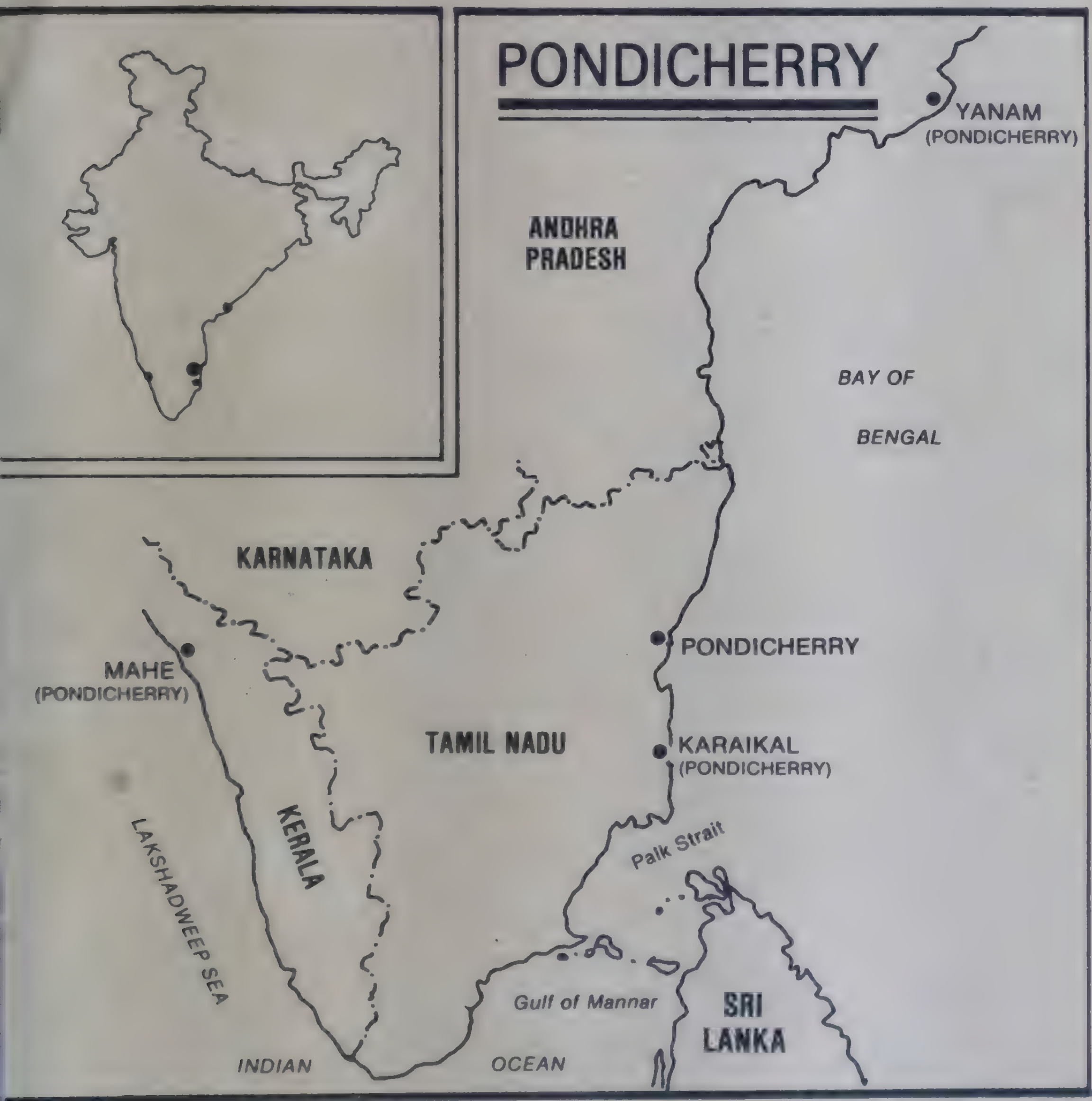
River Mahe forms the northen boundary of Mahe town separating it from the enclaves of Kallayi and Naluthara on the north. The Coringar river, which is a branch of Gautamin Godavari river flows through the town of Yanam.

History. Pondicherry entered modern history when the French East India Company established a settlement there in 1673. The French converted this obscure little village into a flourishing trading centre. French was the last European power to come to India for trade. The Duch and the English had already established themselves at various centres in India. The Portuguese who came first w by this time a spent force. It was quite nat that rivalries should arise among the l powers for dominance in India. Actually w brought them into conflict in India was riva at home, that is, in Europe. The Dutch w the first to cross swords with the Fren They captured Pondicherry in 1693 returned it to France under the Treaty Ryswick in 1699. Pondicherry regained prosperity in a few years. In 1706 Pondich- ry had a population of 40,000 while English town of Calcutta had barely 22,0

In the meantime, the French East In Company had run into financial difficult and the Company was forced to abandon th trading posts in Bantam, Surat and Masulip nam. In 1720 the Company was reconstitut as the "Perpetual Company of the Indies" a new French establishments sprang up in East. Mauritius was occupied in 1721, Ma on the Malabar Coast soon after, Yanam 1731 and Karaikal in 1738. With the appo ment of Dupleix as Governor of Pondiche in 1742 France became involved in Ind politics. Dupleix harboured ambitions establishing a French Empire in India.

When the Austrian Succession War (17 48) broke out in Europe, England and Fra took opposite sides. Anglo-French hosti spread to India. The English captured so French ships. Dupleix reacted sharply. captured Madras in 1748. The Austrian of Succession was ended by the Treaty Aix-La-Chappelle and Madras was retur to the English. Fresh hostilities, howe broke out between the English and French in India. Pondicherry changed ha according to the fortunes of the An French wars. The English captured P dicherry in 1761, returned it in 1765, reto in 1778, captured it a third time in 1793 finally restored it to France in 1814.

When at last British paramountcy established in India, Pondicherry cease be of any political importance and the Bri let the French continue in their possess in India. The French Government han over the Administration of their territorie India to the independent Governmen India in November, 1954. The territories


PONDICHERRY
YANAM
(PONDICHERRY)
ANDHRA PRADESH
BAY OF BENGAL
KARNATAKA
PONDICHERRY
MAHE
(PONDICHERRY)
TAMIL NADU
KARAIKAL
(PONDICHERRY)
KERALA
Palk Strait
LAKSHADWEEP SEA
Gulf of Mannar
SRI LANKA
INDIAN OCEAN

anded over were constituted into the Union erritory of Pondicherry.

dministration. Pondicherry is admi- stered by the President of India through a Lt. Governor who is advised by the Council of Ministers which is responsible to the legislative assembly, consisting of 33 members. Normally the Counil of Ministers under a Chief Minister carries on the Administration directly.

Districts

District	Area (sq.km)	Population	Headquarters
araikal	160	1,20,010	Karaikal
ahe	9	28,413	Mahe
ndicherry	293	4,44,417	Pondicherry
anam	30	11,631	Yanam

State of Economy. Nearly 45% of the population in the Territory are engaged in agriculture and allied pursuits. In all 90% of the cultivated area is irrigated. Area and production of main crops during 1985-86: Rice: 25547 ha. (57200 M.T.), Millets: 4025 (13,00 M.T.), Pulses: 9010 (5,800 M.T.), Sugarcane: 3,112 (3,05,000 M.T.), Oilseeds: 7800

(14,520), Cotton: 2313 (10,500 bales).

There are 11 large scale industries, (6 Textile Mills, two Sugar Mills, one Paper Mill, one Caustic Soda Unit and one Ceramic Unit) and 19 Medium Scale Industries which provide employment to 17,000 persons.

This apart, there are 2395 registered Small Scale Industries generating employment opportunities to 16,000 persons.

Tourist Centres. Pondicherry is a living monument of French culture in India. Ending the Coromandel coast it reposes in the eternal embrace of the tidal waves.

Among the places of interest are Goverr ment palace, Beach, Auroville, Sri Aurobind Ashram, Baharatiyar Samadhi, French Inst tute, Jawaharlal Institute of Post-Graduat Medical Education and Research, India Institute of Indology, Romain Rolland Librar Botanical Garden, Alliance Francoise, Ous teri Lake, Joan of Are Square, Temples an Churches.

Lt. Governor: Tribhuvan Prasad Tewary.
Chief Minister: M. O. H. Farook (Congress)

A World Space Centre in India

Will India have a Cape Kennedy or Baikanur?

The establishment of an international centre to carry out joint research and to develop space technologies to explore natural resources was one of the main ideas mooted by the Soviet leader Mikhail Gorbachev when he paid an official visit to India by late November, 1986. The project, as visualised by him, would include a school for the training of specialists from developing countries like cosmonauts, and a facility for launching spacecraft. Such a centre, he said, could be set up in India, should it be ready for this purpose.

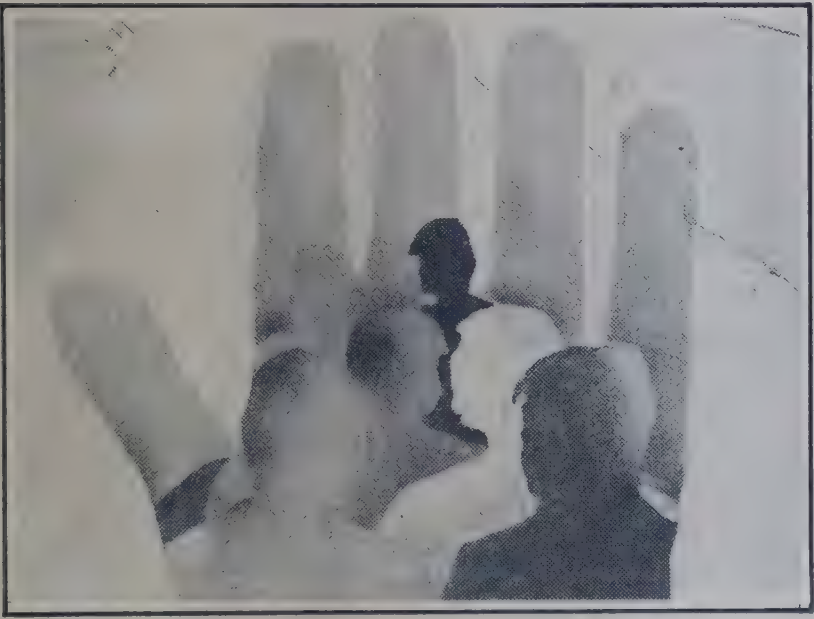
Mr. Gorbachev was lustily cheered as he spelt out his proposal for "Star Peace" to replace Star Wars, referred to identity of views between India and the Soviet Union on issues like disarmament, steps to eliminate threats of nuclear holocaust and dealt with issues close to India's heart, the demilitarisation of Indian Ocean. A cascading crescendo of applause greeted his warm references to the bilateral relations and the "reliable foundation" on which these were based, namely the Treaty of Peace, Friendship and Cooperation.

Later, the Prime Minister, Mr. Rajiv Gandhi, in his brief speech, made a significant departure from the prepared text to say that "Our Treaty of Peace, Friendship and Cooperation enshrines our abiding trust and confidence in each other".

The Central hall of Parliament, the venue of the day's function had in the past honoured other Soviet leaders like Khrushchev, Kosygin and Brezhnev — as the Vice-president Mr. R. Venkataraman noted in his wlecome address. It was a packed house which gave a standing ovation to Mr. Gorbachev as he made a ceremonial entry along with Mr. Venkataraman, the Prime Minister and the Lok Sabha Speaker Mr. Balram Jakhar. A smiling Mr. Gorbachev acknowledged their greetings with folded hands.

After Mr. Gorbachev had spoken Mr. Gandhi referred warmly to the Soviet Union which 'has supported us in our moments of anxiety and helped us in building a modern economy.'

Commending Mr. Gorbachev's 'view of peace' Mr. Gandhi hailed his ready acceptance of the successive proposals of the six-nation initiative for disarmament and added. His own proposals at Reykjavik go far beyond what we attempted. They are remarkable for their 'sweep and boldness'. In the interest of humanity, all nuclear-weapon countries, Mr. Gandhi said, must come together in a binding compact to eliminate nuclear weapons and prevent the spread of confrontation to outer space.



COVER FEATURE

HUMAN RESOURCE DEVELOPMENT

India has embarked on the gigantic task of harnessing the energy of 75 million people for the reconstruction of the nation. Paucity of funds is a major constraint. But it should not dampen the spirit.

Human Resource Development (HRD) has been defined broadly as "the process of ncreasing the knowledge, skills and the capacities of all people in a society."[1] It has economic political and socio-cultural connotations—development of human capital, qualities of citizenship and ability to lead rich, full and useful lives. Almost all societal processes—demographic, educational and occupational—are subsumed by it Therefore HRD has as its components population planning and planning the quality of living of the people in respect of health, housing, education, employment and income.

HRD Is inititated for two purposes: to increase social welfare and to increase labour productivity. Unlike non-human resources, natural or man-made, human beings are the resources for, and the conscious beneficiaries of, development. In almost all socieites, particularly in non-socialist socieites, contradictions exist as between development of human resources as a productive factor and human beings as the receipients of benefits, owing to the existence of inequalities in the distribution of income, assets and opportunities. There exist in them exploitative mechanisms with regard to the utilisation of productive power of certain sections and the appropriation of its benefits by other sections which do not incur any costs or participate in the production process.

Under-utilised. The Seventh Five Year Plan document of India mentions that the bulk of human resources in the country remains under-utilised, if not totally unutilised, even after thirtyfive years of planned economic development. The causes identified are poverty, illiteracy, ill-health and unemployment of vast sections of the population. For instance, the Planning Commission itself admits that 37 per cent of the total population—which came to about 280 million persons in 1985—remained below the poverty line.[2] Further, the top 30 per cent aggregated to itself more than half of the total consumption of goods and services in the country.[3]

Chronic shortages in housing facilities, high birth and death rates, widespread under-nutrition, high infant child and maternal mortality rates, high proportions of non-school going children, heavy order of drop out from the early classes of the primary school, widespread practice of child labour at abysmally low wage rates, for very long hours in the day under unsafe and unhealthy conditions of work, and chronic unemployment and under-employment, are typically associated with poverty.[4]. Nothing short of a social transformation involving structural changes in production relations can hope to bring about improvement in the living conditions of the poor.

On the subject of HRD the plan document specifically states that besides 'qualitative improvement in curricula and teaching methods to ensure relevance, and to impart to students, workers and artisans the values knowledge and the skills required for emerging developmental tasks, the human resource development also includes measures to improve health status and steps to improve the participation of vulnerable groups .... in the developmental process'.[5]

New Ministry. It is in this context that one finds significance in the formation of a new Ministry of HRD inSeptember 1985.[6] Th Ministry has five departments: Educator Culture, Arts, Youth Affairs and Sports an Women's Welfare. The conceptu framework of the Ministry consists in 'buil ing up all-round personality of human being and, to this end, integrating under on umbrella as many relevant activities as poss ble with a view to evolving a package inputs.

Immediately before the formation of th new Ministry of HRD its predecessor, th Ministry of Education, had published a document for country-wide debate, titled *Challenge of Education – A Policy Perspectiv (Challenge)* in August 1985. This was followed up by the new Ministry's document *National Policy on Education, 1986 (NEP)* i May 1986.

The *Challenge* gives a gruesome picture o the educational situation in the country. I states that in spite of high rates of growth o educational institutions, teachers and expenditure, the progress achieved in education even in quantiative terms has been ver low. Besides, inter-regional differences i educational expansion have also remaine wide. Educational progress of women, backward communities and scheduled castes an scheduled tribes has lagged much behind There also existed the problem of vas rural-urban disparities in educationa achievement.

Dismal. The statistical details supplied i the *Challenge* regarding the available educational facilities, present an appallingly disma picture: one-fifth of the habitations in the country have no primary schools; in 40 pe cent of the habitations which have primar schools, 40 per cent have no pucca buildings another 40 per cent have no blackboard; 6 per cent have no drinking water facilities and 35 per cent of the schools have only single teacher each to teach three or mor different classes. There are also school without teachers and teachers who subcontract their work to unqualified persons. Th fact that 40 per cent of the population do n have adequate schooling facilities, and nearly 40 per cent of them remain below th poverty line indicates the strong nexus between poverty, educational facilities an illiteracy.

In terms of enrolment, the *Challenge* note nat 60 of every 100 children enrolled in Class I drop-out before they reach class V nd the corresponding number of drop out y the time they reach class VIII is of the rder of 77. It goes on to catalogue the hortcomings also in the higher stages of ducation — about the bias observed in avour of the rich and the urban-based opulation, about poor quality of teaching, ndifferent learning, out-moded examination ystem, corruption, and lack of any meaning- l link between education and employment.

There exist, according to the *Challenge*, everal constraints on educational policy naking: technological, economic, legal and nancial. Among them the 'economic con- traints which arise from the nature of pro- luction relations, rural-urban disparities and skewed distribution of income' are by far he most formidable.

However the *Challenge* does not even nention the need for changing the produc- ion relations. Instead, it envisages, quite nrealistically, that massive educational de- elopment could take place among the poor, nly if appropriate changes are effected in he content of teaching, quality of teachers, nd technology of education and that educa- ion could by itself, bring about the neces- ary socio-economic change. For instance, it s stated that for the purpose of alleviation of overty through changes in the technologies nd modes of production in the rural and the norganised sector, 'the research, extension nd training institutions should pay special ttention to the generation of relevant know- edge through systematic research and levelopment.

unds Needed. The major emphasis n the *Challenge* is on the financial con- traints. Not only has it chided the 'unsub- tantiated argument that it is possible to save he situation with non-monetary inputs', but lso argued that 'there is no point in discus- ing universalisation of education, removal of literacy, qualitative improvement of school nd higher, and technical education, or of stablishment of institutions of excellence nless a system is evolved for allocation of unds on the basis of an objective determina- ion of norms of per unit cost in various treams'.

The conclusion therefore follows that the rovision of adequate funds would do the trick however much the socio-economic structure is inimical to educational expansion among the poor. And this inspite of the dire warning given by the Education Commission (1964-66) regarding the problems of ensuring equity, quality and relevance in education in highly structured societies.

The Challenge delineated the goals that the nation should place before itself in the matter of educational development: (1) generation of new knowledge; evolution of principles, methodology and guidelines for the application of knowledge and provision of knowldge and skills for solving problems of development; (2) ensuring socio-economic well being, competence and creativity of the individual; (3) imparting of knowledge about concepts and facts relating to different subjects and for developing of skills in the area of languages and communication, as also interest in hobbies, games and sports; (4) equipping pupils with competence and (5) integrating the individual into the social system.

It is averred that thus perceived, 'education can be the most effective means for equalising opportunities and reducing disparities between human beings'. This belief again reflects the naive optimism that education can develop on equitable basis in a highly inegalitarian socio-economic structure and that if thus developed, education would wipe out inequalities in the socio-economic system.

Radical Change. The *Challenge* sees several factors favourable for restructuring the education system through the new policy framework it has adumbrated: namely, the conviction on the part of the majority of the people that the existing system needs radical transformation, the perception that teachers do not inbue the values of good citizenship in their students, the desire for an overall transformation of the social, cultural and economic environment and the support of the infrastructure—technology and policy initiatives already in existence.

On the basis of such an understanding the *Challenge* has identified the elements of a strategy of educational planning. It is here that the poverty of the strategy manifests itself most glaringly. It has taken the position that universalisation of primary education through the formal schooling system is impossible in the foreseeable future. Therefore an alternative, 'holistic model' is proposed. In this model pre-primary education would be left to *Angan-Wadis;* primary education would be organised in the same location in continuation and in conjunction.

After evaluation by a public examination, admissions would be made to the stage of classes VI to X. At this stage children should enter the vocational stream. While this is the general scenario presented for school education, there is a definite stipulation that 'pace-setting model schools' would come into existence in the Central Sector for the 'most meritorious children'.[7] Another plank of spreading education is Adult Education through efforts by the bureaucracy supplemented by voluntary agencies.

In the area of higher education, the approach is one of selective admissions, delinking of degrees from jobs, and special coaching for students belonging to scheduled castes and scheduled tribes as well as of restrictive admission to postgraduate courses only to students who have good academic record. The document also discusses organisational matters, importance of the management and technical education, vocationalisation of higher secondary education, diversification of higher education, examination reform, and depoliticisation of education.

In sum, the *Challenge* has considered universalisation of education through the formal system impracticable and left out from consideration the crucial question of linking the development of higher education with employment.

The NEP. After several months of public debate and in the light of numerous discussions held at the level of experts, policy makers and administrators, Government of India came up with the National Educational Policy document (NEP) in May 1986. The NEP envisages a National System of Education whose cardinal principles will be access to education of a comparable quality to all students upto a given level, and a common educational structure of 10+2+3 (5 years of primary, 3 years of upper primary school, and 2 years of high school, 2 years of post high school, and 3 years of collegiate education).

It speaks of the need for a national curriculum framework as a common core of education, minimum essential quality of performance at each stage, inter-regional mobility of students at higher levels of education, network arrangements among institutions engaged in research and development and lifelong education. Special emphasis is put on the education of women, scheduled castes and scheduled tribes, and other educationally backward sections and regions. It also envisages a vast programme of adult education for persons in the age group of 15 to 35 years.

The NEP avowedly stands for a holistic approach of child development in which education would form one of the ingredients the others being nutrition and health; universal enrolment and universal retention of children in school upto the age of 14 years and improvement in the quality of education; a large systematic programme of non-formal education for school drop-outs and non-school-going children; widening, conscientising and vocationalising secondary education; establishment of pace-setting schools (Navodays Schools) for children with special talent; consolidation and upgrading of the existing system of higher education; development of autonomous colleges; encouragement of high quality research in the Universities; expansion of open university and distance learning; establishment of a rural university; and, the promotion of technical and management education. It also repeats the earlier resolve to delink degrees from jobs and reform the examination system.

Education Service. There are in the NEP some other ideas also such as 'operation black board' which implies the provision of a minimum of two classrooms and two teachers, one male and one female, in every primary school, and the constitution of an Indian Education Service and of Distric Education Boards.

The NEP has also been widely commented upon by educationists and othe social scientists in the country. The government has strongly defended the NEP in all its aspects — the national system of education the national core curriculum and *Navodaya Vidyalayas*.

The criticism levelled against the NEP cover a wide range: from the lack of emphasis on moral education to the exaggerated laims on the efficacy of modern educational echnology in educational expansion.

About the resolve to universalise primary ducation (of five years of schooling) by 1990 nd of elementary education (of eight years f schooling) by 1995, there exists wide- pread scepticism. 'The battle against illi- eracy, by all accounts, has to be waged as art of the anti-poverty campaign and not nerely as a challenge to educational metho- lology or technology.' The Prime Minister imself has admitted that the goals of adult teracy and universalisation of primary ducation by 1995 was a 'gigantic task'.

The government seems to view the prob- em as merely one of mobilising adequate esources. In fact, the problem is much leeper. For instance, without radically res- ructuring the society in such a way as to reate conditions for the eradication of the vil of child labour, it will be unrealistic to xpect that universalisation of elementary ducation would succeed even in the unlike- y event of mobilising adequate resources for he purpose. In fact, instead of taking steps to bolish child labour, the government is ngaged in an exercise of granting legitima- y to it, under stipulated work and wage orms. Such an approach is sure to defeat ttempts to universalise elementary educa- ion through the formal system.

Non-formal. The note that the NEP ssigns to non-formal education (NFE) thus ecomes obvious and inevitable. However he NEP has left its discussions on non-formal ducation disturbingly vague by merely aying that 'much of the work of running NFE entres will be done through voluntary agen- ies and panchayati raj institutions'. The esults of following such a two-pronged olicy would be to ensure better educational acilities to the better-off and to dole out ducational facilities of an indifferent kind in nadequate measure to the underdogs of ociety.

The NEP does not make it clear as to what ype of voluntary agencies it has in mind for aking up the task of NFE. The largest and he most widely based of all voluntary gencies which readily comes to mind is the olitical parties themselves. In some other ountries, it is the dedicated cadres of olitical parties which undertook the task of radicating illiteracy.[8]

Given the conditions which prevail in India, one shudders however at such a prospect. Apart from the political parties, there do not exist at the moment in most States voluntary agencies capable of discharging the functions of NFE honestly, efficiently and on a large scale. Even if they did, their success would be seriously circumscribed since spending time on education is rightly considered a waste by millions of households in this country who are deprived of most social and economic opportunities.

The Navodaya Vidyalaya is the same earlier 'model school' mentioned in the *Challenge* in a different guise. It is justified on the ground that "it is universally accepted that special talent or aptitude should be provided with opportunities to proceed at a faster pace, by making good quality education available to them..." While there has been widespread opposition to the idea, as being elitist, it has earned support from persons who find the assurance of excellence in education to the talented children, however much a small fraction it would be of such children who really get into this system.

Vocationalisation is a pet theme of educational planners. The NEP also swears by it. According to it, vocationalisation enhances employability, reduces the mismatch between demand for and supply of skilled manpower and provides an alternative for those who would pursue higher education for want of an alternative.

However, by the admission of the Central Advisory Board of Education, "unless more jobs are created and we knew what types of jobs will be available, the expansion of vocational education may not only be wasteful but may lead students to a blind alley". Professor Shukla has pointed out that "1.5 crores of matriculates and graduates on unemployment rolls today are not likely to be absorbed by the economic system whatever skills are developed through either vocational education or training on the job"[9]

At the stage of higher education, the NEP approach is the following: consolidation of the existing system; restricted, merit-based admission to colleges and universities; and delinking degrees from jobs. It also places great emphasis on thrust areas of science and technology eventhough it recognises also the need to bring about "a fine synthesis between change-oriented technologies and the country's continuity of cultural traditions."

The Delinking. The delinking of degrees from jobs through the establishment of a National Testing Service (NTS) will determine what talents are required for particular jobs and which applicants, irrespective of whether or not they are university graduates, have them. It is expected that once the NTS gets going, the demand for formal education may rapidly decline. The delinking does not however offer any solution to the question of the linkage between the educational and the economic sectors. If the economy grows and diversifies there will arise an increasing demand for educated and skilled manpower, be they with or without degrees. Labour market projections and manpower planning have to be, in an integrated fashion, linked with educational planning.

A problem which has not received due attention of the NEP is the emigration in large numbers of technically and professionally educated persons to countries in the West. The process has been likened to a mining operation by one of the critics.

One of the serious shortcomings of the NEP is the total absence of any discussion of its financial implications. The total Seventh Plan allocation on Education is about Rs. 638 crores; but the expenditure required for implementing the NEP may well exceed Rs 15000 crores during the Seventh Plan period The Prime Minister and the Minister for HRD have promised to raise the proportion o expenditure on human resource development to total national product from the present level of 3 per cent to 6 per cent only during the Eighth Plan period.

Cut to Size. What the position o finances would be during the interim period is unclear. Given the resource constraint and lack of clarity that exists in respect o action programmes, it would seem advisable for the government to try out the NEP and a few of its alternatives on a sample basis i selected areas. In fact it is this kind of a approach that other countries have adopted in the matter of educational reorganisation

Such pilot work is essential in a country like India in which the problems of educational reorganisation are much more complicated and diverse that in most other countries in the world. It is also essential to ensure that the efforts at human resource development do not flounder on the bedrock o paucity of resources and to see that they proceed on even keel by keeping essential balance with economic and manpower planning.☐

Notes and References

1. Harrison, F and Myers, C.A. *Education, Manpower and Economic Growth,* New York, McGraw Hill. 1964.
2. 3. 4. 5. *Reserve Bank Bulletin June 1986* which points out that 39 per cent of the rural households in the country averaging assets less than Rs. 10,000 per household accounted for only 5 per cent of the total assets of the rural households. At the same time, 8 per cent of the households averaging assets more than Rs. one lakh per household accounted for 46 per cent of the total assets.
6. Doubts have however been raised about the usefulness of merely renaming the Ministry. Bhabatosh Datta has asked 'whether the combination of a hundred-and-odd chiefdoms known as 'Departments' under one umbrella will mean a real change in the total development of our human resources'.
7. "In a sense, the model school idea subsumed the much larger and socially crucial question of conflict between the educational interests of the mobile middle class and the oppressed masses... (The Government has substituted the rich-poor divide with the spurious bright-average divide the focus o concern" Krishna Kumar, 'Towards A Policy?, *Economic and Political Weekly,* April, 1986 · pp.566-567.
8. In Russia and China, "the revolutionary partie which came to power had the spread of literacy and education as both a party and a nationa goal. The party cadres did substantial work i eradicating illiteracy and spreading education' N. Jayaram, '"New Policy": A Critique', *Mainstream,* January 1986, pp.44–48. It has to be borne in mind however that the post-revolutionary circumstances in which they functioned d not exist in India.
9. Suresha Chandra Shukla, 'Policy Game in Perspective', *Economic and Political Weekly,* April 1986, p.567.

PART FOUR

WORLD OF SPORTS

OLYMPICS

Olympics, the greatest of all sports events, is also the largest congregation of amateur competitors in every branch of sports and games. It has its origin in Greece. The earliest celebration of the Olympics is recorded to have taken place in July 776 BC, when Coroibos, a cook from Elis, won the foot-race. The ancient games were terminated by an order issued in Milan in AD 393 by Theodosius I, the Emperor of Rome.

Modern Olympic games are conducted every four years on venues selected by the International Olympic Committee. The games were revived in 1896 by a French Baron named Pierre de Coubertin.

Modern Olmpics were staged at the folowing cities.

1896	April 6—April 15	Athens, Greece
1900	May 20—Oct. 28	Paris, France
1904	July 1—Nov. 23	St. Louis, USA
1908	April 27—Oct. 31	London, Britain
1912	May 5—July 22	Stockholm, Sweden
1916	Not held - world war	
1920	Apr 20—Sep. 12	Antwerp, Belgium
1924	May 4—July 27	Paris, France
1928	May 17—Aug. 12	Amsterdam, Holland
1932	July 30—Aug. 14	Los Angles, USA
1936	Aug. 1—Aug. 16	Berlin, Germany
1940	Not held - world war	
1944	Not held - world war	
1948	July 20—Aug. 14	London, Britain
1952	July 19—Aug. 3	Helsinki, Finland
1956	Nov. 22—Dec. 8	Melbourne, Australia
1960	Aug. 25—Sept. 11	Rome, Italy
1964	Oct. 10—Oct. 24	Tokyo, Japan
1968	Oct. 12—Oct. 27	Mexico City, Mexico
1972	Aug. 26—Sept. 10	Munich, W. Germany
1976	July 17—Aug. 1	Montreal, Canada
1980	July 19—Aug. 3	Moscow, USSR
1984	July 28—Aug. 12	Los Angeles, USA

Seoul Olympics. Twenty-fourth games are scheduled to be held in Seoul, S. Korea in 1988.

This being called Summer Olympics, Winter Olympics also are held from 1924, again once in four years. 1984 Winter Games were held at Sarajevo, Yugoslavia.

Medals table in the 84 Games: East Germany 9 Gold 9 Silver, 6 Bronze, USSR 6 - 10 - 9, U.S. 4 - 4 - 0, Finland 4 - 3 - 6, Sweden 4 - 2, Norway 3 - 2- 4, Switzerland 2 - 2- W. Germany 2 - 1 - 1, Canada 2 - 1- 1, Italy 0 - 0, Britain 1 - 0 - 0, Czechoslovakia 0 - 2 - France 0 - 1 - 2, Yugoslavia 0 - 1 - 0, Japan 1 - 0, Liechtenstein 0 - 0 -2, Austria 0 - 0 -

The greatest number of competitors in a Summer Games was 7,500 from 140 countr in spite of Soviet block boycott, in the 19 Los Angeles Olympics, surpassing 7,174 fro 122 countries in Munich in 1972. The fewe was 311 from 13 countries in the first Gam at Athens in 1896. Only 12 countries took p in the Games in 1904. France entered t largest ever contingent of 880 men and fo women in 1900 Paris Games.

XXIII Olympic (Summer) Games in Angeles, was the third Olympics in USA. Angeles played hosts for a second time, af 52 years.

The Soviet Union and its 13 allied countr kept out of Los Angeles Olympics, stat they were not satisfied with the secu arrangements. Observers took it as a venge of last Games when only 81 of the members of IOC participated in the 1 Moscow Olympics. It was U.S. who led boycott then protesting against the milit interference of USSR in Afghanistan. But a good number of about 5,000 sportsmen a women from 140 nations took part. Now I is formulating a law to debar countries ever, if they boycott a particular Olymp

Million Dollar Games. Pe Ueoberroth, 47, was the mastermind beh the four-million-dollar Los Angeles Gar that involved four-fifths of the nations of globe. He fashioned this greatest-show sports without government aid and with fleecing the citizens. Even, Hollywood

Venue of 1992 Olympics

BARCELONA BIEN VENIDO

Barcelona, the major Spanish port has finally done it! Three times spurned, the fierce Spanish honour has been restored when Barcelona was selected to host the 1992 Summer Olympics. The 90-member International Olympic Committee with its headquarters in Lausanne, Switzerland decided by a secret system of votes, the site of the 1992 Olympics.

The voting is proceeded by elimination, with the lowest scorer dropping out of each poll. For the first time, electronic voting machines were installed to shorten the complex procedure. Six cities had entered the sweepstakes for the 1992 Summer Olympics. They were Barcelona, Paris, Amsterdam, Birmingham (U.K.), Brisbane (Australia) and Belgrade (Yugoslavia).

The candidate-cities together had budgeted more than 70 million dollars to flood IOC members with publicity, parties and gifts.

Barcelona's share was a tidy sum close to $ 9 million. A full time staff of 35 prepared the most expensive and elaborate campaign of all the candidate countries. This is the first time that the Spaniards will be hosting the Olympics though they have been trying for more than 60 years.

Barcelona, with a population of 1,750,000 (1971) and a backdrop of mountains and idyllic Mediterranean coast-line serves as a fitting venue for the 1992 Summer Olympics. The city with its mild and agreeable climate, its broad, busy avenues, and the attractions of its old buildings make it one of the most interesting cities on the Mediterranean.

Sports is in the blood of Spaniards. Bull fighting, the traditional pageant of danger and courage is an old one. The country's most popular sport today is soccer with the people standing together and staking their country's honour in it.

Barcelona is more than a cultural centre for Spain as a whole. It has nurtured the traditional Catalan dances and offers various tourist attractions like numerous museums, libraries, operas, ballets and various sports like automobile racing, foot-ball matches and bull-rings.

After the Seoul Olympics 88, one is given the golden opportunity of witnessing the 1992 Summer Olympics in the salubrious and perfect surroundings of Barcelona. After Seoul 88 adieu till we meet again in Barcelona!

Disneyland took a fortnight's off to rejoice with a milling crowd of 92,000 watching the proceedings inside the stadium and another 30,000 standing outside the Los Angeles Memorial Collesium during the opening ceremony. This was the Olympics witnessed by the whole world with more than 250 million watching it through television network. And the Games piled up $ 150 million (Rs. 190 crore approx) surplus, ten times greater than predictions.

Hosts America dominated in almost every competition. And their 83 Golds surpassed the 80 won by Soviet Union in Moscow, four years ago. The Romanians and the Yogoslavs, the only Eastern Block countries to have taken part took away 71 medals — Romania with 20 Gold, 16 Silver 17 Bronze and Yugoslavia 7 - 4 - 7.

China, which took part for the first time made a fairly good impression with majority of success in weightlifting. And they had surprise victories in shooting too, with a total tally of 32 madals like the Italians.

India's Share. India does not have much to be proud of, but Kerala has. The Southern Star P. T. Usha raised the hopes of first ever Indian Athletic Medal by qualifying in 400 m Hurdles with a timing of 55.54 seconds beating U.S. Champion Judi Brown. But the first Indian Woman to reach an Olympic final, though ran her best in 54.42 seconds was late by one hundredth of a second finishing fourth.

Before her, another Kerala Star, Shiny K. Abraham, became the first Indian Woman to qualify for the semifinals in this Olympics. She competed in 800 meters. In 4 × 400 m relay Kerala girls Usha, Shiny and M. D. Valsamma along with Karnataka's Vandana Rao helped India reach the finals.

Indian Hockey Team had sad time. India, Gold Medalists in the previous Olympics in Moscow (1980), led by Zafar Iqbal could not even reach the last four stage. West Germany with better goal average entered semi final. In the final, Pakistan defeated West Germnay 2—1, in extra time. Bronze medal was won by Britain, who beat Australia. India beat Holland to win the fifth place.

Indian stars competed in Wrestling, Boxing, Shooting, Yatching and Weight Lifting also. But in all these events India performed very badly, and came nowhere near a medal.

The Star of this Olympics was Olympics was America's Carl Lewis. He won gold in the 100 metres, 200 metres, Long Jump and 4 × 100 metres relay. He became the second American to do so, equalling 1936 Berlin performance of compatriot Jesse Owens who won gold medals in the same four events. Carl Lewis literally outshone him, bettering time and distance.

This 23-year-old U.S. black started with 200 m clipping three-hundredths of a second to head a clean 1 - 2 - 3 American sweep in the event after 32 years. Then he made it a flash of lightning in the Long Jump pit, ran a whirl wind 100 m in the second fastest Olympic timing of 9.99 second. And in the company of the other three fastest men in the world he made it a grand finale registering the only world record in the track and field competition claiming the gold in 400 m relay in 37.83 sec

Dalley Thompson, 26, from Britain, made it a second decathlon Gold equalling American Bob Mathias' double of 1948 and 52. Thompson scored 8797 points just one short of the world mark, but beating the world record holder Jurgen Hingsen of West Germany to second place. A new weighting of decathlon points is being adopted later with Thompson's score being upgraded to 8846 points earning him the world record without even lacing up his shoes.

Edwin Moses. Edwin Moses, who forgot his lines while taking oath made it as per script to defend 400 m Hurdles. With 117 straight wins so far he earned a place amongst greats like Jesse Owens, Paavo Nurmi and Emil Zatopek.

The other stars who shone the true Olympic spirit included Michael Gross, the West German Swimmer who got two world records along with Canadian Alex Baumann, Sebastian Coe of Britain who became the only athlete to retain 1,500 m.

The lady of the meet was the leggy Valarie Brisco Hooks of U.S. who won a 200 - 400 double, both with new marks and adding a share in the winning 1,600 m. relay team. Mother of a two-year-old, Valarie had a memorable game equalling the triple Gold of Wilma Rudolph of the 1960 Games.

Joan Bnoit, U.S., won the first ever Marathon of the Olympic history for women, the 26 miles race being thrown open to the fair sex after 56 years of athletics history.

American sprinter Evelyn Ashford, who was after a poor fifth performance of 1976, and being denied a chance in 1980 due to boycott ran a 10.97 sec. Olympic recorded 100 m to become the fastest woman of the meet.

Decker & Bud. In the midst of moments of ecstasy, there were glimpses of agony as well. An aghast stadium watched the race of the meet being marred as the favourite Mary Deckes Seaney of U.S. was stripped in 3,000 meters as she was leading all the way at 1,600 m mark. Zola Budd the adapted South African on the British side was found to be interfered and she was disqualified, though it was no consolation for Mary for all the toil of all these years. After beating the 1972 silver medalist, she was denied the pleasure of running an Olympic race in 1976 and 1980 and this was her first chance.

Then there was the Jamaican quarter-miler Bertland Cameron after qualifying bravely in spite of pulling his hamstring was forced to withdraw in the finals. Added to it there were 12 athletes debarred for life, caught using performance boosting drugs.

In swimming America oustshined all winning 21 Golds. In the new event of Synchronised Swimming also U.S. Women won Gold. They won a lot of Golds in boxing and wrestling and in Gymnastics won the men's team championship.

In the case of World Records Los Angeles was far behind, Moscow. In Moscow there were 36 World Records, but in Los Angeles it was only 11, ten in Swimming and the remaining one in Athletics.

Only a third of the 140 participating countries won medals at the 23rd Olympics. India was among the countries that drew blanks.

The 687 medals - 229 Gold, 229 Silver and 229 Bronze - were shared by 47 countries, the United States alone claiming 174.

Apart from China and Japan, which collected 32 medals each the rest of the Asian countries could manage just three medals among them— those won by Pakistan, Syria and Taiwan.

The Africans, with 12 medals, performed slightly better, while the South Americans won 25, Brazil leading the way wth eight.

The Romanians and Yugoslavs, the only Eastern Bloc countries to have taken part in Olympics, took 71 medals—Romania 53 and Yugoslavia 18.

Medals Table

	G	S	B	T
United States	83	61	30	174
Romania	20	16	17	53
West Germany	17	19	23	59
China	15	8	9	32
Italy	14	6	9	32
Canada	10	18	16	44
Japan	10	8	14	32
New Zealand	8	1	2	11
Yugoslavia	7	4	7	18
South Korea	6	6	7	19
Britain	5	11	21	37
France	5	7	15	27
The Netherlands	5	2	6	13
Australia	4	8	12	24
Finland	4	2	6	12
Sweden	2	11	6	19
Mexico	2	3	1	6
Morocco	2	0	0	2
Brazil	1	5	2	8
Spain	1	2	2	5
Belgium	1	1	2	4
Austria	1	1	1	3
Portugal	1	0	2	3
Kenya	1	0	2	3
Pakistan	1	0	0	1
Switzerland	0	4	4	8
Denmark	0	3	3	6
Jamaica	0	1	2	3
Norway	1	2	3	6
Greece	0	1	1	2
Nigeria	0	1	1	2
Puerto Rico	0	1	1	2
Colombia	0	1	0	1
Egypt	0	1	0	1
Ivory Coast	0	1	0	1
Peru	0	1	0	1
Syria	0	1	0	1
Thailand	0	1	0	1
Ireland	0	1	0	1
Turkey	0	0	3	3
Venezuela	0	0	3	3
Algeria	0	0	2	2
Cameroon	0	0	1	1
Dominican Republic	0	0	1	1
Iceland	0	0	1	1
Chinese Taipei	0	0	1	1
Zambia	0	0	1	1

G- Gold, S- Silver, B- Bronze, T- Total.

Two golds and no silver awarded in each of following events: Women's 100m freestyle swimming, men's gymnastics individual pommel horse, rings, women's gymnastics uneven bars, balanced beam. Four silvers, no bronze in men's gymnastics vault. Two bronzes in men's gymnastics floor exercises. Two bronzes in pole vault. Two bronzes in all judo and boxing categories.

Olympics Results

1984 Los Angeles – Men

100 m: 1. Carl Lewis (US) 9.99; 2. Sam Graddy (US); 3. Ben Johnson (Can).
200 m: 1. Carl Lewis (US) 19.80 (Oly. Rec.); 2. Kirk Baptiste (US); 3. Thomas Jefferson (US).
400 m: 1. Alonzo Babers (US). 44.27; 2. Gabriel Tiacoh (CLV); 3. Antonio Mckay (US).
800 m: 1. Joaquim Cruz (Bra) 1:43.00 (OR); 2. Sebastian Coe (GBR); 3. Earl Jones (US).
1500 m: 1. Sebastian Coe (GBR) 3:32.53 (OR); 2. Stev Cram (GBR); 3. Jose Abascai (Spain)
3000 m steeplechase: 1. Julius Korir (Ken) 8:11.80; 2. Joseph Mahmud (Fra); 3. Brian Diemer (US).
5000 m: 1. Saieed Aouita (Morocco) 13:05:59 (OR); 2. Markus Ryffel (Swe); 3. Antonio Leitao (Por).
10,000 m: 1. Alberto Cova (Ita) 27:47.54; 2. Martti Vainio (Fin); 3. Michael McLeod (BBR).
Marathon: 1. Carlos Lopes (Por) 2:09.21; 2. John Treacy (Irl); 3. Charles Speding (GBR).
110 m H: 1. Roger Kingdom (US) 13.20 (OR); 2. Gregory Foster (US); 3. Arto Byggare (Fin).
400 m H: 1. Edwin Moses (US) 47.75; 2. Danny Harris (US); 3. Herald Schmid (FRG).
20 km walk: 1. Ernesto Canto (Mex) 1:23:13; 2. Raul Gonzales (Mex); 3. Maurizio Damilano (Ita)
50 km walk: 1. Raul Gonzales (Mex) 3:47:26; 2. Bo Gustaffson (Swe); 3. Sandro Bellucci (Ita).
400 m. relay: US (Sam Graddy, Ron Brown, Calvin Smith and Carl Lewis) 37.83 (OR) and WR); 2. Jamaica; 3. Canada.
1600 m rely: US (Sunder Nix, Ray Armstead, Alonzo Babers and Antonio McKay) 2:57.91; 2. Great Britain, 3. Nigeria.
High Jump: 1. Dietmar Moegenburg (FRG) 2.35; 2. Patrci Sjoeberg (Swe) 3. Zhu Jianhua (Chn).
Pole vault: 1. Pierre Quinon (Fra) 5.751; 2. Mike Tully (US); 3. Earl Bell (US).
Long Jump: 1. Carl Lewis (US); 2. Gary Honey (Aust); 3. Giovanni Evangelistic (Ita).
Triple Jump: 1. Al Joyner (US) 17.26; 2. Mike Conley (US); 3. Keith Connor (GBR).
Shot Put: 1. Alessandro Andrei (Ita) 21.26; 2. Michael Carter (USA); 3. Dave Laut (US).
Discus: 1. Rolf Danneberg (FRG) 66.60; 2. Mac Wilkins (US); 3. John Powell (US).
Hammer throw: 1. Juha Tiainen (Fin) 78.08; 2. Karl Hans Riehm (FRG); 3. Klaus Ploghaus (FRG).
Javelin: 1. Arto Haerkoenen (Fin) 86.76; 2. David Ottley (GBR); 3. Kenth Elderbrink (Swe).
Decathlon: 1. Daley Thomson (GBR) 8,797 (OR); 2. Jurgen Hingsen (FRG); 3. Siegfriend Wentz (FRG).

Women

100 m 1. Evelyn Ashford (US) 10.97 (Oly. Rec.). 2. Alice Brown (US), 3. Merlene Ottery - Page (Jam).
200 m: 1. Valerie Brisco-Hooks (US) 21.81 (OR), 2. Florence Griffith (US), 3. Merlene Ottery - Page (Jam).
400 m: 1. Valerie Brisco Hooks (US) 48.83 (OR) 2. Candra Cheesborough (US) 3. Kathryn Cook (GBR)
800 m: 1. Doina Melinte (Rom) 1:57.60; 2. Kim Gallager (US); 3. Fita Lovin (Rom).
1500 m: 1. Gabrielle Dorio (Ita) 4:03.25; 2. Doina Melinte (Rom); 3. Maricica Puica (Rom).
3000 m: 1. Maricica Puica (Rom) 8:35.96 (OR); 2. Wendy Sly (GBR); 3. Lyn Williams (Can).
Marathon: 1. Joan Benoit (USA) 2:24:52; 2. Grete Waltz (Nor); 3. Rosa Mota (Por).
100 m hurdles: 1. Benita Fitzerlad Brown (US) 12.84; 2. Shirley Strong (GBR); 3. Kim Turmer (US).
400 m H: 1. Nawal El Moutawakel (Morocco) 54.61 (OR); 2. Judi Brown (USA); 3. Cristina Cojocaru (Rom).
400 m relay: 1. US (Alice Brown, Janet Bolden, Candra Cheesborough, Evelyn Ashford) 41.65; 2. Canada; 3. Britain
1600 m relay: 1. US (Lillie Leatherwood, Sherri Howard, Vakerue Brisco Hooks and Candra Cheesborough) 3:18.29 (OR); 2. Canada; 3. West Germany (FRG).

High Jump: 1. Ulrike Meyfarth (FRG) 2.02 (OR); 2. Sara Simeoni (Ita); 3. Joni Huntley (US).

Long Jump: 1. Anisoara Stanciu (Rom) 6.96; 2. Vali Ionescu (Rom); 3. Susan Hearnshaw (GBR).

Shot Put: 1. Claudia Losch (FRG) 20.48; 2. Mihaela Loghin (Rom); 2. Gael Martin (Aust)

Discus: 1. Ria Stalman (Hol) 65.36; 2. Leslie Deniz (US); 3. Florenta Craclunescu (Rom).

Javolin: 1. Tessa Sanderson (GBR) 69.56 (OR); 2. Tina Lillak (Fin); 3. Fatima White Bread (GBR).

Heptathlon: 1. Glynis Nunn (Aust) 6,390 points; 2. Jackie Joyner (US) 6,385; 3. Sabine Everts (FRG) 6,363.

ASIAN GAMES

The origin of Asian Games goes back to 1947 when the Asian Relations Conference held at New Delhi, decided to organise an international games meet for Asian countries on the lines of Olympic games, once in four years. Since then the games have grown into the biggest sports festival in Asia.

The Games were held at New Delhi, India (1951); Manila, Philippines (1954); Tokyo, Japan (1958); Jakarta, Indonesia (1962); Bangkok, Thailand (1966); Bangkok, Thailand (1978); Teheranl Iran (1974); Bangkokl Thailand (19781); New Delhi, India (1982); and Seoul in S. Korea (1986).

Seoul Asiad

Medals tally

Country	G	S	B	T
China	94	82	46	222
South Korea	93	55	76	224
Japan	58	76	77	211
Iran	6	6	10	22
India	5	9	23	37
The Philippines	4	5	9	18
Thailand	3	10	13	26
Pakistan	2	3	4	9
Indonesia	1	5	14	20
Hong Kong	1	1	3	5
Qatar	1	0	3	4
Lebanon	1	0	1	2
Bahrain	1	0	1	2
Malaysia	0	5	5	10
Iraq	0	5	2	7
Jordan	0	3	1	4
Kuwait	0	1	8	9
Singapore	0	1	4	5
Saudi Arabia	0	1	0	1
Nepal	0	0	8	8
Bangladesh	0	0	1	1
Oman	0	0	1	1

G: Gold; S: Silver; B: Bronze; T: Total

Atheletics Results:

Men:

100 mtrs: Mansoor Talal (Qatar - 10.30, Record) 2. Hiroki Fuwa (Japan) 3. Zheng Chen (China). *200 mtrs:* Chang Jae Keun (Korea - 20.71) 2. Li Feng (China) 3. Nagura Masahiro (Japan). *400 mtrs:* Takano Susumu (Japan - 0:45.00, Asian Record) 2. Prado Isidro Del (Philipines) 3. Al Malky Mohammed Amur (Oman). *800:* Kim Bok-Joo (Korea - 1:49.15) 2. Ryu Tae-Kyung (Korea) 3. Al Sowailem, Najem (Kuwait) *1500:* Oshida Shuji (Japan - 3:43.88) 2. Ryu Tae-Kyung (Korea) 3. Sulaiman Mohammed (Qatar) *5000:* Kim Jong-Yoon (Korea - 13:50.63 - Record) 2. Shintaku Masanari (Japan) 3. Kanai Yutaka (Japan) *10000 mtrs:* Shintaku Masanari (Japan - 28:26.74 - Record) 2. Kim Jong Yoon (Korea) 3. Seko Toshihiko (Japan) *3000 Steeple Chase:* Aikyo Shigeyuki (Japan - 8:36.98 - Record) 2. Cheng Shouguo (China) 3. Nagasate Hajime (Japan). *110 mtrs: Hurdles:* Yu Zhicheng (China - 14.07 - Record) 2. Lu Quanbin (China) 3. Kim Jin-Tae (Korea) *400 mtrs: Hurdles:* Hamada Ahamad (Bahavain - 0:49.31, Asian Record). 2. Yoshida Ryoichi (Japan) 3. Al Douwalia Jasem (Kuwait) *20 Km: Walk:* Sun Xiaoguang (China - 1:25:46 - Record) 2. Jiang Shaohong (China) 3. Ram Chand (India) *Marathon:* Nakayama Takeyuke (Japan - 2:08:21 - Record) 2. Taniguchi Hiromi (Japan) 3. Ryu Jae-Sung (Korea) *High Jump:* Zhn Jian Hua (China - 2.31) 2. Liu Yunpeng (China) 3. Ujino Shuji (Japan) *Pole Vault:* Ji Zebiao (China - 5.40 - Record) 2. Liang Xueren (China) 3. Lee

Jae-Bok (Korea) ***Long Jump:*** Kim Jong-il (Korea - 7.94) 2. Usui Junichi (Japan) 3. Chen Zunrong (China) ***Triple Jump:*** Yamashita Norifumi (Japan - 17.01 - Record) 2. Park Young-Jun (Korea) 3. Zou Zhenxian (China) ***Shot Put:*** Ma Yong Feng (China - 18.30) 2. Gong Yitian (China) 3. Urita Yoshihisa (Japan) ***Discuss Throw:*** Li Weinan (China - 58.28) 2. Meada Yuko (Japan) 3. Singh Manjit (India) ***Javelin Throw:*** Misoguchi Kazhuhiro (Japan 76.60) 2. Kim Jae-Sang (Korea) 3. Park Joug-Sam (Korea) ***Hammer Throw:*** Murofushi Shigenobu (Japan - 69.20) 2. Luo Jun (China) 3. Lu Dongping (China) ***Decathlon:*** Chen Zebin (China - 7255) 2. Kojo Takeshi (Japan) 3. Park Young-Jun (Korea) ***4×100 Relay:*** China (0:39.17 - Asian Record) 2. Japan 3. Korea *4×100:* Japan (3:02.33 - Asian Record) 2. Iraq 3. Philipines.

Women:

100 mtrs: Lydia De Vega (Philipines - 11.53 Record) 2. P. T. Usha (India) Ratjai Sripet (Thailand) ***200:*** P. T. Usha (India - 23.44 Record) 2. Lydia De Vega 3. Mi Sun Park (Korea) ***400:*** P. T. Usha (0:52.16 - Record) 2. Shiny Abraham (India) 3. Hiromi Isosak (Japan) ***800:*** Chun Ae Him (Korea - 2:05.72) 2. Liuxia Yang (China) 3. Josephina Mary Singarayar (Malasia) ***1500:*** Chun Ae Lim (Korea - 4:21.38) 2. Liuxia Yang (China) 3. Wel Ja Kim (Korea) ***3000:*** Chun Ae Lim (09:11.92 - Record) 2. Xiuyun Zhang (China) 3. Suman Rawat (India) ***10,000:*** Xiuting Wang (China - 32:47.77 - Asian Record) 2. Kumi Araki (Japan) Hongyan Xiao (China) ***100 m: Hurdles:*** Chen Kemei (China - 13.78) 2. Akimoto Chizuko (Japan) 3. Jojima Naomi (Japan) ***400 Hurdles:*** P. T. Usha (India - 56.08 Record) Zhao Qianqnian (China) Chen Juying (China)

10 Km: Walk: Guan Ping (China 0:48:40) 2. Xu Yongjiu (China) 3. Hirayama Hideko (Japan) ***Marathon:*** Asai Eriko (Japan - 2:41:03) Miyahara Misoko (Japan) Wen Yawmin (China) ***High Jump:*** Sato Megumi (Japan - 1.89) Zheng Dazhen (China) Kim Hee Sun (Korea) ***Long Jump:*** Liao Wenfen (China - 6.37) Huang Doug Huo (China) Isogai Minako (Japan) ***Shot Put:*** Huang Zhihong (China - 17.51) Cong Yuzhen (China) Suzuki Aya (Japan) ***Discus Throw:*** Hon Xuemei (China - 59.28 Record) Li Xiaohui (China) Lee Sang Yuk (Korea) ***Javelin Throw:*** Li Baolian (China - 59.42) Matsui Emi (Japan) Jang Sun Hee (Korea) ***Heptathlon:*** Zhu Yuquing (China - 5580 Record) Ye Liauying (China) Ji Jung Mi (Korea) ***4×100 Relay:*** China (0:44.78 Asian Record) Thailand, Korea ***4×400:*** India (3:34.58 - Record) Japan, China.

Placing: First three positions in terms of total medals.

Gymnastics: 1. China; 2. Korea; 3. Japan. ***Golf:*** 1. Korea; 2. Philipines; 3. Japan. ***Rowing:*** 1. China; 2. Japan; 3. Korea. ***Hand ball:*** 1. Korea; 2. China; 3. Japan. ***Shooting:*** 1. China; 2. Korea; 3. Japan. ***Cycling:*** 1. Japan; 2. China; 3. Korea. ***Archery:*** 1. Korea; 2. Japan; 3. China. ***Hockey:*** 1. Korea; 2. Japan; 3. Pakistan. ***Table Tennis:*** 1. China; 2. Korea; 3. Japan. ***Yachting:*** 1. Korea; 2. China; 3. Pakistan. ***Weight Lifting:*** 1. China; 2. Korea; 3. Japan. ***Bowling:*** 1. Japan; 2. Philipines; 3. Korea. ***Aquatics:*** 1. Japan; 2. China; 3. Korea. ***Tennies:*** 1. Korea; 2. China; Indonesia. ***Basket ball:*** 1. China; 2. Korea; 3. Japan. ***Feucing:*** 1. China; 2. Korea; 3. Japan. ***Equestrian:*** 1. Japan; 2. Korea; 3. Kuwait. ***Taekwondo:*** 1. Korea; 2. Iran; 3. Jordan. ***Judo:*** 1. Korea; 2. Japan; 3. China. ***Wrestling:*** 1. Korea; 2. Japan; 3. Iran. ***Badminton:*** 1. China; 2. Korea; 3. Japan. ***Boxing:*** 1. Korea; 2. India; 3. Thailand. ***Volleyball:*** 1. China; 2. Korea; Japan. ***Atheletics:*** 1. China; 2. Japan; 3. Korea. ***Football:*** 1. Korea; 2. Saudi Arabia; 3. Kuwait.

Winners for India

Gold: P. T. Usha (200 m, 400 m, 400 hurdles, 4 × 400 Relay), Kartar Singh (100 Kg. Freestyle wrestling).

Silver: P. T. Usha (100 m), Shiny Abraham (400 m), Sahu Birajdar, Sir Jairam, Daljit Singh, Jaipal Singh (All Boxing), Soma Dutta (Shooting), Khazan Singh Tokas (Swimming), Farokh Tarapore, Dhruv Bhandari (Yachting).

Bronze: Chand Ram (20 km walking), Manjit Singh (Discuss Throw), Suman Rawat (3000 m), G. D. Kamble, John Williams, Gopal Dewang, Manjit Pal Singh, Bhadur Gurung (All Boxing), J. S. Ahluwalia, Gulam Mohammed Khan, Raghubir Singh, Adhiraj Singh (Equestrian), Sandeep Byala, Cawas Billimoria, Shyam Singh Gurjar, Bunnu Singh (all Judo), Joydip Das, Bhagirath Samai, Ghisalal Yadav (Shooting), G. Muthuswami (weight lifting), Suresh Kumar, Gurmakh Singh (Wrestling), Badminton Men's team, Hockey (men and women), Volleyball (men).

COMMONWEALTH GAMES

Commonwealth Games are conducted every four years on the lines of the Olympics, but entries are limited to Commonwealth countries only. Games have been staged in the following cities.

1930 Hamilton (Bermuda), 34 London (Britain), 38 Sydney (Australia), 50 Auckland (New Zealand), 54 Vancouver (Canada), 58 Cardiff (Britain), 62 Perth (Australia), 66 Kingston (Jamaica), 70 Edinburgh (Britain), 74 Christ Church (New Zealand), 78 Edmonton (Canada), 82 Brisbane (Australia), 86 Edinburgh (England).

Final Medal position in the 13th Commonwealth Games held at Edinburgh (England).

	Gold	Silver	Bronze
England	52	42	48
Canada	51	34	30
Australia	40	46	34
New Zealand	8	16	14
Wales	6	5	12
Scotland	3	12	18
N. Ireland	2	4	9
Isle of Man	1	0	0
Guernsey	0	2	0
Swaziland	0	1	1
Hong Kong	0	0	2
Malawi	0	0	2
Botswana	0	0	1
Jersey	0	0	1
Singapore	0	0	1

SAF GAMES

The first South Asian Federation Games at Dasarath Stadium, Kathmandu, Nepal was staged in Sept. 84. Overall champion was India with 88 medals (44-28-16). Sri Lanka with 30 medals (7-11-12) were runners. In Athletics India had 24 (10-8-6) and Sri Lanka 14 (5-5-4). India's 24 -member swimming team brought 45 medals with 20 - year-old CRPF Inspector Khajan Singh accounting for eight medals himself. Bengal's 16 -year-old Bula Chowdhury claimed gold in all four events - 100 & 200 butterfly, 100 m freestyle and 400 B.S. realy.

Sri Lanka's 6 swimmers grabbed 15 medals with 18 -year-old Julian Boiling winning five herself. Four Bangladesh swimmers won nine medals.

In the second Games 1985 Dec. Dhaka, Bangaladesh, two more disciplines were added to make the total seven. The whole ceremony was on a lower key and Indian contingent though a depleted side topped honours this time also. The Indians performed well in Athletics, Swimming and Weight lifting and won the Footaball totalling 89 medals.

Ace Indian runner Shiny Abraham who won gold in 200m and 800m was adjudged as the 'Woman of the Meet' by Bangladesh Sports Writers Association. Bangladesh swimmer Mosharaff Husain Khan had this title in men's section. The others adjudged best were: Athletics (men) - Shah Alam (Bangladesh), Kabaddi - Sukhbinder Singh (India), Wrestling-Abdul Mazid (Pakistan). Boxing-S. Jairam (India). Weightlifting-G. Mathivanan (India). Football Best Playar-Kaiser Hamid (Bangladesh); Top scorer—Sisir Ghosh (India- 4 goals).

Medals Tally: India 46 Gold, 29 Silver, 14 Bronze, Pakistan 16-19-9, Bangladesh 9-16-34, Sri Lanka 2-4-7, Nepal 1-5-12, Bhutan 0-0-4.

Next SAF Games will be hosted 64 India in 1987, skipping 1986 being the year of Commonwealth and Asian Games.

NATIONAL GAMES

National Games were revived after seven years and were conducted in New Delhi in Nov. 1985. About 2600 athletes participated in the one-week event of 26 disciplines. Four states were allowed to compete in team games. Championship decided on 10-7-5 points system. Jasmene Arethna, 17 -year-old cycling phenomenon from Maharashtra and Reza Shirazi, 16 -year-old swimmer also from Maharashtra were adjudged the bests. G. Muthuswamy Jr. weightlifter from Tamilnadu came closer to Reza by rewriting five Commonwealth records.

Maharashtra won National Gold Trophy, Punjab the Silver and West Bengal the Bronze though Delhi and M.P. finished up in medals table. Medals tally:

State	Gold	Silver	Bronze
Maharashtra	51	35	32
Punjab	32	20	27
Delhi	22	15	19
Madhya Pradesh	21	9	11
West Bengal	20	29	32
Haryana	15	15	13
Uttar Pradesh	14	12	13
Kerala	12	11	7
Karnataka	10	23	24
Tamil Nadu	6	10	12
Manipur	6	6	4
Rajasthan	4	11	14
Andhra Pradesh	4	8	7
Chandigarh	4	1	3
Orissa	3	3	3
Himachal Pradesh	3	0	2
Bihar	1	12	12
Gujarat	1	1	3
Assam	0	1	4
Jammu and Kashmir	0	1	0
Meghalaya	0	0	2

Athletics: Vijay Pal Singh 18 -year-old Agri student from Haryana posted new national mark clearing 4.91 m. in Pole Vault. Sarnam Singh U.P. threw Javelin to a record distance of 78.38 m. P. T. Usha won gold in 100 m. Hurdles and 400 m. Shiny Abraham. Kerala, won gold in 800 m, 200 m Silver in 400 m. M. D. Valsamma equalled career best of 13.9 secs in 100 m Hurdles. Ram Reddy of A.P. bt. nine-time National Champ Adil Suman Wales of Mah. to become the fastest athlete and won the 200 m. also to earn the sprint double

Football: 1. Punjab, 2. Mah., 3. Andhra.

Hockey: Men: 1. U.P., 2. Maharashtra, 3. Punjab. Women: 1. Punjab, 2. Bihar, 3. Karnataka.

Volleyball: Men: Kerala bt. Haryana 15–12, 10–15, 15–8, 8–15, 15–2. Women: Kerala bt. T. N. 15–2, 15–11, 15–13.

Basketball: Men: 1. Delhi, 2. Rajasthan, 3. T.N. Women: 1. Punjab, 2. Maharashtra, 3. Kerala.

Tennis: Men: 1. Maharashtra, 2. Bengal, 3. A. P. Women: 1. Maharashtra, 2. Delhi, No bronze awarded as there were only three teams.

Table Tennis: Men: Kamlesh Mehta Mah. bt. S. Sriram Mah. 3–0. Women: Vyoma Parikh Mah bt. Monalisa Barua Assam 3–1. Team-Men: 1. Delhi, 2. Mah, 3. Assam. Women: 1. Mahrashtra, 2. Karnataka, 3. T.N.

Badminton: Singles Men: Syed Modi U.P. bt. Harjeet Singh Delhi 2–0, Women: Madhumita Bist Bengal bt. Seema Bhandari M.P. 2–0. Doubles: Men: Sanal Misra Orissa and Levoy D'sa Mah. Women: Ami Ghia Mah. and Madhumita Bist Bengal.

Handball: Men: 1. Punjab, 2. J & K, 3. Maharashtra. Women: 1. Mah, 2. Punjab, 3. Bengal.

Swimming: Reza Shirazi Anita Sood, both of Mah won six golds each. Maharashtra picked 21 of 29 golds.

Rowing: 1. Maharashtra, 2. Bengal, 3. U.P.
Equestrian: Capt. J.S. Ahluwalia Punjab.
Archery: 1. Bengal, 2. U.P., 3. Manipur.
Shooting: Punjab won 8 of the 12 medals

Skeet gold was claimed by Harinder Singh Bedi of Punjab who beat Veteran Olympian Karni Singh who was once of world standard. M.P. men and Bengal women won the honours.

Cycling: Brothers Sikandar Singh & Balkar Singh shared seven golds and added another for their team Punjab. Jasmine Arathena won all four golds in women's section. Trevor Maxwell, national record holder for Andhra in 1000 m time trial was banned as he returned the certificate for second place.

Boxing: 1. Maharashtra, 2. Karnataka, 3. Delhi.

Weight lifting: Five Commonwealth all by G. Muthuswammy of T.N. and 7 National records broken, Jagmohan Sapru of Delhi rewriting two national marks. Delhi and T.N- won 8 golds 2 Silver and 3 Bronze each. In the women championship introduced for the first time Karnataka won 10 golds 5 Silver and one Bronze.

Judo: Open category- 1. Sandeep Bazala Punjab, 2. C. Billimoria, Mah 3. K. K. Gupta Bengal and Paramjit Arya Delhi.

Kabbadi: Men: 1. Mah, 2. Karnataka, 3. M.P. Women: 1. Mah, 2. Bengal, 3. M.P.

Talkwondo: U.P. and Haryana won.

JUNIOR NATIONAL ATHLETICS

Hissar: January '86. Punjab won the overall championship in the inaugural junior national atheletics. They won the boys under 16 (88) and under 19 (86) and came second in girls under 18 (80). Kerala came first in girls under 15 and girls under 18. Tamil Nadu's Saliamma (girls under 18), Haryana's Neelam (girls under 15), Delhi University's Saibal Roy (boys under 19), Punjab's Pradeep Kumar (boys under 16) and Maharashtra's Zenia Aayrston (boys under 15) won the individual prizes for best athelets.

ATHLETICS

First ***World Athletics*** August 1983 at Helsinki. East Germany won title. First ever 1–2–3 sweep by U.S. in 100 m since 1913 Olympics, Carl Lewis winning in 10.07 seconds.

Edwin Moses U.S. won 400 m hurdles, his 81st consecutive win.

World record high jumper Zhu Jianhua of China got only a bronz. Steve Ovette (Britain) finished only 4th in 1500 meters. Albert Juantorena, the Cuban double gold medalist of last Olympics fractured a bone in 800 m heats and was out.

East Germany completed a medal sweep in Heptathlon for women. 32-year-old Jarmila Kratochvilova of Czechoslovakia won 400 m in world record time of 47.99 and also 800 m. 29-year old Norwegian Grete Waitz won Marathon.

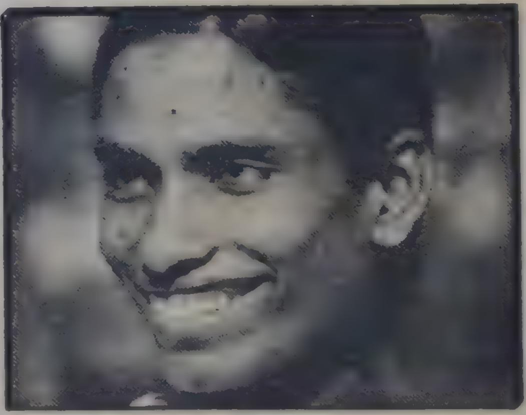
International Amateur Atheltic Federation met the entire cost of two athletes, one male and one female from each country. Indian long jumper Mercy Mathew Kuttan could not produce a single valid jump while Chand Ram finished 42nd in 20 km walk.

World Cup Athletics at Canberra, Australia in Oct. 85: world record holders in 12 out of 32 individual events competed but only two world records were broken, both by GDR women, Martina Koch in 400 m and in the team quarter in 4 × 100. U.S. men team won championship beating USSR and GDR women won vs. Soviets. Asian team under P. T. Usha with 7 Indians were sixth in women section and seventh and last in men's section.

Women: 1. East Germany (GDR) 121, 2. USSR 105, 3. Europe 86, 4. USA 61, 5. Oceanic 52, 6. Asia 42, 7. Africa 41, Men: 1. U.S. 123, 2. USSR 115, 3. GDR 114, 4. Europe 97, 5. Africa 81, 6. Oceanic 65, Best by Indian representatives were 7th place in 400 m hurdles (56.36 sec) by P. T. Usha and 7th by Balwinder Singh in shot put. Shiny Abraham (800 m), Vandana Rao (200 m), Bageicha Singh (1500 m) and Raghbir Singh (Hammer) placed eighth in their events.

Asian Track & Field Athletics at Jakarta Sept. 1985: Six Asian records broken. China won 19 golds, 15 silver and 8 bronze. 42-member Indian squad won 21 medals including 10 golds, five by P. T. Usha

Usha, the Bionic Woman



P.T. Usha, the jewel in the crown of Indian Atheletics is surging forward. Every since she came on to the tracks, there has never been any stopping. Seoul 1986 was an unforgettable experience for Usha; and through her for India. Because only she could make India's presence felt in the Asiad arena when she won an incredible fete:4 golds and a silver! She was the only woman athelete in the whole of Asia to win 3 individual golds (200, 400 and 400 hurdles) with records. She anchored the 4×400 relay team for another gold – another record too!

After her touch-and-go affair with the Olympic medal at Los Angeles, there is a marked improvement in Usha's performance. Motivation and preseverance along with her ever maturing natural talent, have taken her into new heights of achievement.

The Sixth Asian Track and field championship at Jakaratha saw P.T. Usha at her international best, medalwise. She won five golds here in her favourite sprints—100 and 200 meters, 400 metre and 400 meter hurdles and she was the anchor for Indian women's 4×400 meter relay gold.

At Jakartha, she became the Star of Asian Atheletics. No athelete in India has ever come anywhere near Usha's achievements in an international event. Even in Asia, Usha has few, if any, parallels.

She captained the Asian team in the World Cup at Canberra. But she could not continue her winning streak there. Before Jakartha, Usha had already become the best Railway Athelete in the world at Olomonc, Czeckoslovakia. October, 1985 saw her being adorned with the Arjuna Award.

hereself. P. T. Usha won golds in 100, 200, 400, 400 m H and 4 × 400 and a bronze in 4 × 100. Shiny Abraham won gold in 800 and 4 × 400. Balwinder Singh won shot put, Raghubir Singh Bel in Hammer, Bageicha Singh in 1500 m.

Goodwill Games, Mowcow: July 86. With a view to bring in more goodwill and friendship among people, especially between the super power countries, a grand scale sports extravaganza was organised in Mowcow. 32 countries participated in this sports show - Soviet Union headed the medal table with a total of 244, United States came second (140) and East Germany, third (28). In atheletics, most notable perfomance came from Sergei Bubka, the Russian Pole vaulter who rewrote his world record and Canada's Ben Johnson who proved himself too good for Carl Lewis in sprint. Jackie Joyner of U.S. rewrote her own heptathelon world record.

Playmaker's 4 Nation Meet: New Delhi August. Atheletes from U.S.S.R. and Mauritius participated in this meet which was more i the line of a warm-up meet for the India Squad going for the Seoul Asiad. India wo the team championship with 9943 point U.S.S.R. came second (88917) and Mauritu third (6760) S. Kulibaba of U.S.S.R. (Po Vaulter) and 1. Dmitrieva also of U.S.S. (Discuss) won the best male and fama athelete's price.

Boston Marathon: April 86 – Australia Robert De Castella won the 90th Bosto Marathon, one of the most popular marath races in 2hours 7 minutes and 51 seconds – new record.

Trinidad Marathon: in May 86 India's As Agarwal won the International Marath Road race in Trinidad in 2 hours 53 minut and 27 seconds.

Women's World Cup: Amsterdam, Augu 86. Olympic Champion Netherlands retain title, defeating West Germany (3–0). Cana bt Newzealand (3–2) won bronze.

BADMINTON

World Cup Badminton at Jakarta in November Singles men: Iuck Sugiarto, Indonesia bt. Morten Frost Denmark 5-15, 15-6, 15-11: Women: Li Lingwei China retained vs. Han Aiping China 11–8, 11–3.

World Badminton at Calgary, Alberta June 35. Singles Men: Han Jian China bt. Morten Frost Denmark 14–19, 15–10, 15–9. Women: Han Aiping China bt. Wu Jianqui China 6–11, 12–11, 11–2. Doubles women: Han Aiping and Li Lingwei China bt. Lin Ying and Wu Dixi China, defending champions 15–9, 14–18, 15–9 Men: Joo Bong Park and Mon Soo Kim China bt. Li Yongho and Tian Bengei China 6–15, 15–7, 15–9. Mixed doubles: Joo Bong Park and Sang Hee Yoo China bt. Stefan Kanson and Mana Bengston Sweden 15–9, 12–15, 15–12.

National Badminton 1986 January – Kota. Syed Modi (Railways) retained single title, defeating Vimal Kumar (Kerala) 15-12, 15-12. This is Modi's sixth consecutive title. Madhumita Bisth retained women's title defeating Ami Ghia 11-2, 11-9.

All England Championship London March Men: Morton Frost of Denmark regained the title defeating Misbun Sidek of Malasia 15-2, 15-8. Women: Kim Yun-Ja of South Korea beat Quian Ping of China 11-6, 12-11. Men doubles: Joo Bong Pack Moon Soo Kim (South Korea) beat Razif and Jalani Sidek (Malasia) 15-2, 15-11. Women doubles: Chung Myung Hee – Hwang Hye Young (S.K.) beat Kim Jun Ja – Young Sang Hee 15-5, 16-15, 15-8.

Thomas Cup: Jakarta, May – China beat Indonesia 3-2 in the final.

Uber Cup: Jakartha, May: China wins 3-2 against Indonesia to retain the cup. South Korea carne third defeating Japan 3-2.

Malasian Open: Kualalampur, July – Men: Zhao Jian Hua of China defeated Misbun Sidek of Malasia, the holder, 15-10, 15-3. Women: Shi Wen of China defeated Wu Jian Qin also of China 7-11, 12-10, 11-9.

Indonesian Open: Jakartha, July – Men: Icuk Sugiwitho, the Indonesian world champion won the final against Sze Yu of Australia 15-6, 15-6. Women: Shi Wen of China defeated Helen Troke of England 6-11, 11-9, 11-9.

British Masters: London, Septmber – Men: Morten Frost of Denmark defeated Sze Yu of Australia 15-8, 15-5. Women: Yao Fen of China won against Sumiko Kitada of Japan 1-11, 11-2, 11-0.

BASKETBALL

World Championship

Men:

950: i Argentina, 2. U.S., 3. Chile.
54: 1. U.S., 2. Brazil, 3. Philippines.
59: 1. Brazil, 2. U.S., 3. Chile.
63: 1. Brazil, 2. Yugoslavia, 3. U.S.S.R
67: 1. U.S.S.R., 2. Yugoslavia, 3. Brazil.
70: 1. Yugoslavia, 2. Brazil, 3. U.S.S.R
74: 1. Yugoslavia, 2. U.S., 3. Cuba.
78: 1. Yugoslavia, 2. U.S.S.R., 3. Brazil.
82: 1. U.S.S.R., 2. U.S., 3. Yugoslavia.
86: 1. U.S., 2. U.S.S.R.

Women:

954: 1. U.S., 2. Chile, 3. France.
57: 1. U.S., 2. U.S.S.R., 3. Czechoslovakia.
59: 1. Brazil, 2. U.S., 3. Chile.
64: 1. U.S.S.R., 2. Czechoslovakia, 3. Bulgaria.
67: 1. U.S.S.R., 2. S. Korea, 3. Czechoslovakia.
71: 1. U.S.S.R., 2. Czechoslovakia, 3. Brazil.
75: 1. U.S.S.R., 2. Japan, 3. Czechoslovakia.
79. 1. U.S.S.R., 2. S. Korea, 3. Japan.
83: 1. U.S.S.R., 2. U.S., 3. China.
86: 1. U.S., 2. U.S.S.R.

Olympics (Gold, Silver and Bronze)

1936	U.S.	Canada	Mexico
48	U.S.	France	Brazil
52	U.S.	U.S.S.R	Uruguay

56 U.S.	U.S.S.R.	Yugoslavia
60 & 64 U.S.	U.S.S.R.	Brazil
68 U.S.	Yugoslavia	U.S.S.R.
72 U.S.S.R.	U.S.	Cuba
76 U.S.	Yugoslavia	U.S.S.R.
(*Women:* U.S.S.R.	U.S.	Bulgaria)
80 Yugoslavia	Italy	U.S.S.R.
(*Women:* U.S.S.R.	Bulgaria	Yugoslavia)
84 U.S.	Spain	Yugoslavia
(*Women:* U.S.	S. Korea	China)

Asian Games:

1951 Philippines	Japan	Iran 4. India
54&58 Philippines	China	Japan
62 Philippines	Japan	Korea
66 Israel	Thailand	Korea
70 Korea	Israel	Japan
74 Japan	South Korea	China
(Women: Japan	Korea	China)
78 China	S. Korea	Japan
(Women: Korea	China	Japan)
82 Korea	China	Japan
(Women: China	Korea	Japan)
86 China	Korea	Japan

13th Asian Basketball, Kuala Lumpur 1. Philippines, 2. South Korea, 3. China.

Nationals. *Men:* 1934 & 36: Punjab, 38 & 40: Bengal, 44: Punjab, 46 & 48: Mysore, 50 Rajputana, 51: Punjab, 52: Madras, 53-56 Mysore, 57-67: Services, 68: Railways, 69-80 Services, 81: Rajasthan, 82-83: Services.

Women: 1952 & 54: Bengal, 55: Hyderabad 56-59: Bengal, 60: Mysore, 61: Bengal, 62-64 Mysore, 65-66: Bengal, 67-69: Maharashtra 70-71: Bengal, 72-73: Delhi, 74: Bengal, 77 Maharashtra, 79-83: Punjab.

36th National at Calcutta: February 1986 Men: Services regained the national crown the Todd memorial trophy, out playing Tami Nadu 72-47. Women: Railways lifted the Prince Basalat Jha trophy thrashing Karnataka 65-45.

Junior Nationals: Neyveli, Junior Boys Kerala won against Maharashtra 71-67 to lif the C. C. Abraham memorial trophy. Girls Punjab regained the Palokaran Devassy trophy defeating Maharashtra 50-46.

National Youth Basketball: Trivandrum November. Boys: Kerala defeated Maharashtra 70-65. Girls: Maharashtra defeated Madhyapradesh 49-43.

BILLIARDS

World Championship at Delhi Aug. 85: 24-year-old Geeth Sethi Mah became youngest ever champ beating 75-year-old four-time champ Bob Marshal Australia 3809–2453 in four sessions 8 hours final. Sethi to finals vs. holder Michael Ferira India 2513–2379. Marshal to final vs. Subhash Agarwal India 3809–2453. Earlier Sethi with a world record break of 604 bt. Subhash Agarwal

National Billiards Chandigarh Geeth Sethi retained the title defeating S. B. Agarwal 1883-1404. J. N. Patel of Gujarat claimed the Junior title defeating B. Parekh 1022-789.

BOAT RACE

Nehru Trophy, Alleppey, Kerala: 1952-Nadubhagom, 54-Kavalam, 55-Parthasarathy, 57-Napoleon, 58-Napoleon and Kavalam, 59-Napoleon, 60-Kavalam, 61-Napoleon, 62-Kavalam, 63-65: Kainakari, 66-67: Pulinkunnu, 68-Kainakari, 69-Pulinkunnu, 70-Kalluparamban and Pulinkunnu, 72-73: Kalluparamban, 74-76: Karichal, 77-78: Jawahar Tayankari, 79: Valiya Divanji, 80-Karichal, 81-abandoned, 82-84: Karichal, 85: Jawahar Tayankari. 86 Karichal.

Indira Gandhi International Boat Race Cochin, September, 1986: India won 1st and 2nd places. 3rd W. Germany.

International Dragon Boat Race: Singapore, India finishes 3rd behind Thailand and Singapore.

BOXING

Olympics: Light fly: 1. Paul Gonzalez (USA); 2. Salvatore Todisco (Ita); 3. Jose Marcelline Boliver (Ven). Fly weight: 1. Steven McCrory (USA), 2. Redzep Redzepovski (Yug) 3. Eyup Con (Tur). Bantam weight: 1. Maurizio Stecc (Ita); 2. Hector Lopez (Mex), 3. Dale Walter (Can). Feather-weight: 1. Meldrick Taylc (USA), 2. Peter Konyewachie (Nig) 3. Turgu

Aykac (Tur). Light Weight: 1. Permell Whitaker (USA) 2. Luis Artiz (Pur) 3. Martin Ndongo Ebenga (Nig). Light welter weight: 1. Jerry Page (USA) 2. Dhawee Umponmaha (Tha) 3. Mircea Fluger (Rom). Welter weight: 1. Mark Breland (USA) 2. Young-su An (Kor) 3. Joni Nywan (Fin). Light middle weight: 1. Frank Tate (USA), 2. Shawn O'Sullivan (Can) 3. Manfred Zielonka (FRG). Middle weight: 1. Joon-sup Shin (Kor), 2. Virgil Hill (USA), 3. Mahmoud Zaowi (Alg). Light heavy weight: Arton Josipovic (Yug), 2. Kevin Barry (NZ) 3. Mustapha Moussa (Alg). Heavy-weight: 1. Henry Tillman (USA), 2. Wilbie Dewitt (Can), 3. Angelo Musone (Ita) and Arnold Vanderlijde (Hol). Super heavy-weight: 1. Tyrrell Biggs (USA) 2. Francesco Damiani (Ita) 3. Robert Wells (GBR) and Salihu Azis (Yug).

Asiad 1986, Seoul: Light Flyweight: Kwangsoo Oh (Korea). Flyweight: Kwang Sun Kim (Korea). Bantamweight: Sunggil Moon (Korea). Featherweight: Hyeongok Pack (Korea). Lightweight: Hyunkyu Kwon (Korea). Light Welterweight: Kitack Kim (Korea). Welterweight: Dong Gil Kim (Korea). Light Middleweight: Haejung Lee (Korea). Middleweight: Junseop Sin (Korea). Light Heavyweight: Byeongkyong Min (Korea). Heavyweight: Yoohyun Kim (Korea). Super Heavyweight: Hyunman Baik (Korea).

National Boxing: Hyderabad, December '86: Light Fly: Kishen Lal Ghosh (Services). Flyweight: Joseph Prabhu (Services), Bantam: Deva Hansda (Steel Plants). Feather: John Williams (Services). Light: Simon Francies (Steel Plants). Light Welter: Divan Kumar Dhapa (Services). Welter: Phad Padmakar (Services). Light Middle: Devi Chand (Services). Middle: Satya Narayana (Services). Light Heavy: Palvinder Singh (Railways). Heavy: P. Bhasker Sen (Railways). Super Heavy: Jaspal Singh (Steel Plants).

Services won the team championship with 7 titles. Steel Plants claimed 3 and the host, Railways 2.

CHESS

World Chess. *Moscow:* Nov. 10, 85 Garry Kasparov of USSR at 22 became world's youngest chess champion 13–11 vs. compatriot Anatoly Karpov in a gruelling five and a half month tilte series. Kasparov won the Return World Chess Championship held at Leningrad in October '86, defeating Karpov 12-11 in a 24 round encounter.

Asian Womens Chess, Dhaka: 16 year old Anupama Abhyanker, India won, beating nine of her opponents including National Champ Bhagyasree Sathe. 2. Ning Chun Hon, China 3. Rani Hamid, Bangladesh.

Federation Cup Intl. masters Chess Delhi Jan. 86. Soviet Grand master Evegeny Vasyukov, 2. Hasan, 3. Prasad and Vaidya.

National Womens Chess 86 Jan. Jalundhar: Bhagyasree Sathe, Mah. retained scoring new record of nine points in a possible nine., 2. Rohini Khadilkar, Mah, 3. Kiran Agarwal, M.P., 4. A. V. Nirmala, T.N.

National Junior Chess 86 Jan. Calicut. Intl. Master Dibyendu Barua Bengal won all nine points, 2. V. Anand, T.N. 7½ points, 3. P. Manoj Kumar, Kerala 7 points.

Asian Team Chess, Dubai January 86: Philipines won the Tun Abdul Trophy.

Commonwealth Women's Chess, London August 86: India's Jayasree Nilkanth Khadilkar clinched the title with 4.5 points.

Commonwealth Open Chess, London August 86: Grandmaster Johanqu Hijartarshon of Iceland won the title with 8 points. India's O. V. Prasad and Dick Defirmian (U.S.) tied for the second spot with 7 points each.

CRICKET

World Cricket for Prudential Cup 1975 in London: West Indies beat Australia by 17 runs in finals. In 1979, in London West Indies beat England by 92 runs in finals. In 1983 in London India beat last two years holders West Indies by 43 runs in finals. Semi Finals: India beat England by six wickets. West Indies beat Pakistan by eight wickets. Final: On June 25, 1983 India under Kapildev 183 in 54.4 overs (K. Srikkanth 38, Sandip Patil 27, Mohinder Amarnath 26 — Andy Roberts 3 for 32). Windies under Clive Lloyd 140 in 52 overs (Viv Richards 33, P. D. Dujon 25. M. Amarnath 3/12, Madanlal 3/31).

World Championship Cricket at Melbourne, 10th March 1985. India under Sunil Gavaskar won finals beating Pakistan under Javed Miandad by 8 wickets.

Rothmans Cup Cricket Sharjah Nov. 85: Windies under Viv Richards won beating Pak and India. Benson And Hedges World Series Cup Australia.

TEST MATCHES

India in Tests

(As on 12-12-86)

Against	Played	Won	Lost	Draw
England	75	11	30	34
Australia	45	8	20	16 (TIE 1)
W. Indies	54	5	22	27
Pakistan	35	4	6	25
Newzealand	22	8	4	10
Sri Lanka	4	0	1	3

Benson And Hedges World Series Cup, Australia Jan-Feb '86: India, New Zealand and Australia fought in the one day series. India and Australia fought in the three-match final round. Australia won 2-0. Third match was not played. Kapil Dev, Indian Captain won adudged man of the series. Richard Hadlee of New Zealand was awarded the Benson And Hedges International Cricket of the Year Prize.

Scores of the Final round: First final at Sydney: Australia 170 for 8 (44 overs: Boon 50, Marsh 36, Kapil (2 for 21), India 159 (43.4 overs — Vengsarkar 45, Simon Davis 3 for 10). Second final at Melbourne: India 187 (50 overs — Ravi Shashtri 49, Vengsarkar 41), Australia 188 for 3 (47.2 overs. Border 65, Boon 44, Welham 43).

Australia Cup, Sharjah April 86: Imran Khan's Pakistan won the thriller-to-the-last ball-final against Kapil Dev's India by one wicket. Javed Miandad pulled the very last ball of the match from Chetan Sharma for a sixer when Pakistan needed four runs to win. ***Score:*** India 245 for 7 (50 overs — Gavaskar 92, Srikanth 75). Pakistan 248 for 9 (50 overs — Miandad 116 not out). ***Other Matches:*** India beat New Zealand (NZ: 132-8; IND: 134-7) Pakistan beat Australia (Aus: 202-7; Pak: 204-2). India beat Sri Lanka (SL: 205-9; IND: 206-7), Pakistan beat New Zealand (NZ: 64-Qadir 4 for 9, Akram 3 for 10, Elahi 2 for 8; Pak: 66 for no loss).

Champion's Trophy Cricket, Sharjah November 86: West Indies won the trophy defeating Sri Lanka, Pakistan and India. Pakistan came second, losing only to West Indies. India was third winning only against Srilanka. ***Results:*** India won against Sri Lanka by 7 wickets. (SL: 214-9; IND: 215-3 in 41.3 overs. Srikanth 92). West Indies defeated Pakistat by 9 wickets (Oak: 143; WI: 145 for 1). Pakistan defeated Sri Lanka by 4 wickets (SL: 164-7; Pak: 165-6). West Indies defeated Sri Lanka (WI: 248-5; Richardson 109; SL: 55, Walsh 5 wickets for one run from 4.3 overs. A record). Pakistan defeated India by 3 wickets (India-144; Imran 27 for 3; Pak: 147-7, Maninder Singh 22 for 4).

For India test cricket, the year 1986 was historical. First came the Indian tour to England in early May. After winning the Texaco Trophy one day series, there came the moment Indian cricket was waiting for, at Lords. India won the Lords test for the first time. The 5 wicket victory was the first one under Kapil Dev's captaincy, breaking a long chain of defeats in tests for 5 long years. After Melbourne, 81 to be precise. Dilip Vengsarkar scored 126 not out; the first non English batsman to hit 3 consecutive centuries in 3 consecutive test appearances.

India won the series 2-0, first away series victory in 15 years. Then came the Australians in September. Madras test, firstin a series of three, ended in a sensational tie. Only the second time in the history of test cricket. Greg Mathews trapped Maninder Singh l.b.w. when the score was tied. Madras also stoop up to applaud little master Sunil Gavaskar who made his 100th consecutive test appearance. The other two tests in the series ended in dull draws.

India's England Tour, May 86: First Test at Lords: June 10th India won by 5 wickets. Scores: England 294 (Gooch 114, Chetan Sharma 5 for 64) 180 (Kapil 4 for 54) India 341 (Vengsarkar 126 not out) 136 for 5.

Second Test at Headingly: India won by 279 runs. (India 272, 273; England 102, 128),

Ranji: Bombay's World Record

Bombay won Ranji Trophy Cricket 30 times, with 15 in a row from 1959 to 73, a world record in national championships of any cricketing nation. The second most winner was Baroda and Holkar both four times each.

Highest so far: 912 for 8 by Holkar v. Mysore at Indore in 1946 and the lowest 22 by Southern Punjab v. Northern India at Amritsar in 1935. Highest individual 443 n.o. at Pune in 1948 by B. B. Nimbalkar for Maharashtra vs. Kathiawar.

All ten wickets in an innings by P. Chatterjee, of Bengal vs. Assam at Jorhat in 1956. 24 year old Rajasthan medium pacer Pradeep Sundaram took all 10 wickets in first innings and six in second against Vidharbha in Ranji Trophy in Dec. 1 85 at Jodhpor to mark 16 wickets in a match.

P. Chatterjee for Bengal vs. M. P. 1955 and S. Gupta for Bombay Vs. Vidharbha 1961 were the 15 wickets record makers.

Rusy Mody's seven consecutive centuries for Bombay in the two seasons of 1943-45 will be hard to surpass. Ravi Shastri playing for Bombay against Baroda in Ranji on Jan. 9/85 scored all six balls of spinner Tilak Raj to sixers to equal 1968 world record of Gary Sobers of West Indies. Shastri hit 13 sixes highest number of sixes in an innings. His was fastest hundred and fastest double century off 123 balls in 113 mnts.

Vengsarkar 163; Maninder Singh 4 for 24.

Third Test Birmingham: Drawn (England 390, 235 India 390-174-5).

Australia in India, September 86: First one day at Jaipur. Sept. 8th. India won by 7 wickets. Aus: 250 for 3 (Marsh 104, Boon 111; India 251 for 3 (Srikanth 102, Lamba 64) Second one day Srinagar September 9th. Australia won by 3 wickets. India 222-8 (Gavaskar 52), Australia 226-7 (Border 90 not out). Third one day at Hyderabad September 24th. Abandoned due to bad weather. Fourth one day New Delhi October 2nd. India won by 3 wickets. Australia 238-6, India 242-7. Fifth one day Ahmedabad October 5th. India won by 52 runs. India 193, Australia 141. Sixth one day Rajkot. Australia won by 7 wickets. India 260-6 (Lamba 102), Australia 263-3 (Border 91) India won the series 3-1.

First Test, Madras September 23-28: Ended in a tie. Australia 574 for 7 declared and 170 for five declared. India 397, 347 (score board of Indian 2nd innings: Gavaskar c Jones b Bright 90 K. Srikanth c Waugh b Mathews 39 Amarnath c Boon b Mathews 51, Azharuddin c Ritchie b Bright 42, Chandrakanth Pandit b Mathews 39, Kapil Dev c Bright b Mathews 1, Ravi Shastri (not out) 48, Chetan Sharma c Mcder Mot b Bright 23, Kiran More lbw b Bright 0, Shivlal Jadav b Bright 8, Maninder Singh lbw b Mathews 0. Extras 6: Total 347. Mathews 39-5-7-146-5; Bright 25-3-94-5).

Second Test New Delhi Sept. 30. drawn Australia 207-3; India 107-3.

Third Test Bombay: October 19 drawn. Australia 345, 216-2; India 517 for 5 declared.

Ranji Trophy. National Cricket Championship is being conducted since the last 51 years for Ranji Trophy. Kumar Shri Ranjit Singhji (1872-1933) Jamsahab of Nawanagar, Gujarat, was a wizard of the willow game. Nicknamed as Run-get-Singji, in England in 1900 he amassed 3065 runs (average 87.57). His total was 24,567 runs, (average 45) and scored 72 centuries. He played for England against Australia and scored century on debut inspiring many including his nephew Duleep Singhji, who also scored a test hundred on debut.

Ranji Trophy Winners: 1935 and 36 Bombay, 37 Nawanagar, 38 Hyderabad, 39 Bengal, 40 & 41 Maharashtra, 42 Bombay, 43 Baroda, 44 W. India, 45 Bombay, 46 Holkar, 47 Baroda, 48 Holkar, 49 Bombay, 50 Baroda, 51 Holkar, 52 Bombay, 53 Holkar, 54 Bombay, 55 Madras, 56 & 57 Bombay, 58 Baroda, 59-73 Bombay, 74 Karnataka, 75-77 Bombay, 78 Karnataka, 79 & 80 Delhi, 81 Bombay, 82 Delhi, 84 Karnataka, 84 & 85 Bombay, 86 Delhi.

Final 1986 at New Delhi, April: Delhi vs. Haryana. Delhi regained the national cricket crown after a gap of 3 years. They defeated Haryana by an innings and 141 runs. Score:

Delhi 638; Haryana 288 and 209 (Maninder Singh 8 for 54).

Irani Cup for the Ranji Champions vs. the Rest 1960 Bombay, 61 and 62 no match, 63 and 64 Bombay, 65 no match, 66 Rest, 70 & 71 Bombay, 72 Rest, 73 Bombay, 74 Rest, 75 Karnatka, 76 & 77 Bombay, 78 & 79 Rest, 80 Abandoned, 81 Deen, 82 Bombay, 83 Rest, 84 Karnataka, 85 Bombay, 86 Rest of India.

Highest total rest 637 in 86. Lowest rest 83 vs. Bombay in 64. Individual highest 235 n.o. by Surinder Amarnath for Delhi in 1980-81. Best bowling 9 for 101 by Ravi Shastri for Bombay in 80-81.

Irani Trophy: 1986 final at Jodhpur, November 12. Rest of India under Dilip Vengsarkar defeated Ranji Champion Delhi and bagged the Irani trophy for the 10th time. Score: Delhi 266 and 139; rest 637.

Duleep Trophy: 86 final at Bombay. South Zone under K. Srikanth retained the crown by 'outrunning' west zone under Ravi Shastri in the first innings. South had a lead of 224 in the first innings. Score: West 516, 472; South 740.

Wills Trophy Limited Over Cricket: Final at New Delhi on March 9th 1986. Bombay won by one wicket against Delhi. Score: Delhi 226 for 5 in 47 overs; Bombay 228 for 9 in 46.2 overs.

Duleep Trophy Interzonal 1962-65 West 66-68 South, 69 & 70 West 71 South 72 Central 73 West, 74 North 75 & 76 South 77 & 78 West 79 & 80 North 81 & 82 West 83 & 84 North 85 South, 86 South.

Highest individual 287 by East Zone captain Arun Lal against Central Zone in 1986. Highest wickets: 9 for 55 by Balu Gupta for West vs. South 62-63.

Final standing

The following is the final standing of teams in the 1986 World Cup football tournament.

	W	D	L	GF	GA
1. Argentina	6	1	0	14	5
2. West Germany	4	1	2	8	7
3. France	5	1	1	12	6
4. Belgium	3	1	3	12	15
5. Brazil	4	0	1	10	1
6. Mexico	3	1	1	6	2
7. Spain	3	0	2	11	4
8. England	2	1	2	7	3
9. Denmark	3	0	1	10	6
10. Soviet Union	2	1	1	12	5
11. Morocco	1	2	1	3	2
12. Italy	1	2	1	5	6
13. Paraguay	1	2	1	4	6
14. Poland	1	1	2	1	7
15. Bulgaria	0	2	2	2	6
16. Uruguay	0	2	2	2	8
17. Portugal	1	0	2	2	4
18. Hungary	1	0	2	2	9
19. Scotland	0	1	2	1	3
20. South Korea	0	1	2	4	7
21. Northern Ireland	0	1	2	2	6
22. Algeria	0	1	2	1	5
23. Iraq	0	0	3	1	4
24. Canada	0	0	3	0	5

W—won, D—drawn, L—Lost, GF—goals for, GA—goals against.

FOOTBALL

World Cup

1930	Uruguay 4	Argentina	2
1934	Italy 2	Czechoslovakia	1
1938	Italy 4	Hungary	2
1942	No matches held		
1946	No matches held		
1950	Uruguay 2	Brazil	1
1954	W.Germany 3	Hungary	2
1958	Brazil 5	Sweden	2
1962	Brazil 3	Czechoslovakia	1
1966	England 4	W. Germany	2
1970	Brazil 4	Italy	1
1974	W.Germany 2	Poland	1
1978	Argentina 3	Holland	1
1982	Italy 3	W. Germany	1
1986	Argentina 3	W. Germany	2

The 1990 World Cup is to be held in Rome, Italy.

Olympics:

1904: Denmark. 1908: 1. Britain 2. Denmark 3. Holland. 1912: 1. Britain 2. Denmark 3. Holland. 1916: No games. 1920: 1. Belgium, 2. Czechoslovakia 3. Holland. 1924: 1. Uruguay, 2. Switzerland, 3. Sweden. 1928: 1. Uruguay, 2. Argentina, 3. Italy. 1932: Football not held. 1936: 1. Italy, 2. Austria, 3. Norway. 1940 & 44 No games. 1948: 1. Sweden, 2. Yugoslavia, 3. Denmark. 1952: 1. Hungary, 2. Yugoslavia, 3. Denmark. 1956: 1. Yugoslavia, 2. Denmark; 3. Hungary. India was placed fourth. 1960: Yugoslavia. 1964: 1. Hungary, 2. Czechoslovakia, 3. West Germany (FRG.); 1968: 1. Hungary, 2. Bulgaria, 3. Japan. 1972: 1. Poland, 2. Hungary, 3. East Germany. 1976: East Germany (GDR), 2. Poland, 3. USSR 1980: 1. Czechoslovakia, 2. E. Germany, 3. USSR.

1984 at Los Angeles in August, France won finals vs. Brazil 2–0. Francois Bisson and Daniel Zurele scored. Bronze medal for Yugoslavia vs. Italy 2–1. Semi: France 4 Yugoslavia 2; Brazil 2; Italy 1. Qr. Finals: France 2, Egypt 0; Italy 1, Chile 1; Yugoslavia 5, W. Germany 2; Brazil 5, Canada 3.

India failed to qualify for 1984 Olympics too. Past records are 1948 London under T. Aao lost to France 1–2 1952 Helsinki under S. Manna lost to Yugoslavia 1–10, 1956 Melbourne under S. Banerjee reached semi and lost to Yugoslavia 1–4. 1960 Rome under P.K. Banerjee drew France 1–1, lost to Peru 1–3.

Asian Games Football 1951 Delhi. 1. India 2. Iran. 3. Japan. 54 Manila 1. Tawwan 2. Korea. 3. Burma 58 Tokyo 1. China 2. Korea 3. Indonesia. 62 Jakarta 1. India 2. S. Korea. 3. Malaysia. 66 Bangkok: 1. Burma 2. Iran 3. Japan. 70 Bangkok: 1. Burma and Korea shared 3. India. 74 Teheran: 1. Iran 2. Israel 3. Malaysia. 78 Bangkok: 1. S.Korea and N. Korea shared 3. China. 82. Delhi: 1. Iraq 2. Kuwait 3. Saudi Arabia. 86 Seoul: 1. S. Korea 2. Saudi Arabia 3. Kuwait.

8th Asian Cup Football at Singapore in Dec. 1984. Saudi Arabia won vs. China 2–0. 3rd place. Kuwait bt. Iran 6–4, Semi: Saudi 6, Iran 5; China 1 Kuwait 0. India placed last in Pool B with a single draw against Iran 0 –9; lost to China 0–3, UAE 0–2, and Singapore 0–2.

Former champs: 1956 at Hongkong: S. Korea bt. Israel. 60 S. Korea bt. Israel. 64 Israel bt India. 68 Iran bt Burma. 72 Iran bt. S. Korea. 76 Iran bt. Kuwait. 80 Kuwait bt. S. Korea.

Asian Club Football Jeddah in January 1986. South Korea's Daewoo Royals beat Ahli, Saudi Arabia 3-1 in extra time win the cup.

World Youth Soccer at Moscow Sept. 1985 Brazil bt. Spain 1–0 in extra time. 3rd place Nigeria bt. Soviet Union 3–1 in tie breaker.

Asian Youth Foot Ball: Riyad, December '86. Saudi Arabia won the championship beating Baharin 2–0 in extra time. North Korea came third and Quatar, fourth.

Inter Conținental Football Aug. 1985 in Paris. France bt. Uruguay 2–0.

Maradona, the Juggernaut

Think about foot ball, you think about Maradona. Never since the days of great plea has anyone become synonimous with this game like the Argentina captain Diego Maradona. He came at the head of the Argentina squad, saw and conquered the Mexico world cup. Maradona spelled sheer artisty and class, even when you see him nudging in the ball into the English post with his wrist. Like everything classy, he was irresistable in Mexico city. Maradona was voted by the journalists as the best player of 1986 World Cup. All the Argentine goals were scored by him, except in the finals. He was the scorer in the 2–1 victory against England in quarter finals (including the 'God's hand' stuff) and the 2–0 victory against Belgium in semi while he made a brilliant pass to set up Argentina's winning goal in the final, Maradona did not score against West Germany.

However, it was not Maradona, but Gaowry Linekar the ebullient forward of England who top scored in Mexico. He scored six times while Maradona and Careca of Brazil scored 5 each. In fact, it is Linekar who scored a hatrick against Poland, the first English man to win the world cup individual scoring table.

Dr. B.C. Roy Trophy Junior National Football Winners. 1962 Bengal, 63 Delhi and Mysore, 64 Rajasthan, 65 Delhi, 66 Andhra, 67 Bengal, 68 Bengal, 69 Orissa and Kerala, 70 Bengal, 71 Bengal, 72 Kerala, 73 Kerala, 74 Bengal, 75 Bengal, 76 Andhra, 77 Bengal, 78 Bengal, 79 Karnataka, 80 Goa, 81 Railways &

Meradeka at Kuala Lumpur 86 August Malasia bt. Czechoslovakia 3-0.
42nd National Jabalpur: Punjab retained the Santosh Trophy defeating Bengal in a penalty shoot out after goalless regular and extra time.

SANTOSH TROPHY

Year	Winners	Runners-up	Venue
1941	Bengal	Delhi	Calcutta
1942-43		Not held	—
1944	Delhi	Bengal	Delhi
1945	Bengal	Bombay	Bombay
1946	Mysore	Bengal	Bangalore
1947	Bengal	Bombay	Calcutta
1948		Not held	—
1949	Bengal	Hyderabad	Calcutta
1950	Bengal	Hyderabad	Calcutta
1951	Bengal	Bombay	Bombay
1952	Mysore	Bengal	Bangalore
1953	Bengal	Mysore	Calcutta
1954	Bombay	Services	Madras
1955	Bengal	Mysore	Ernakulam
1956	Hyderabad	Bombay	Trivandrum
1957	Hyderabad	Bombay	Hyderabad
1958	Bengal	Services	Madras
1959	Bengal	Bombay	Nowgong
1960	Services	Bengal	Calicut
1961	Railways	Maharashtra	Bombay
1962	Bengal	Mysore	Bangalore
1963	Maharashtra	Andhra	Madras
1964	Railways	Bengal	Gauhati
1965	Andhra	Bengal	Quilon
1966	Railways	Services	Hyderabad
1967	Mysore	Bengal	Calcutta
1968	Mysore	Bengal	Bangalore
1969	Bengal	Services	Nowgong
1970	Punjab	Mysore	Madras
1971	Bengal	Railways	Madras
1972	Bengal	Tamil Nadu	Panaji
1973	Kerala	Railways	Cochin
1974	Punjab	Bengal	Jullundur
1975	Bengal	Karnataka	Calicut
1976	Bengal	Maharashtra	Patna
1977	Bengal	Punjab	Calcutta
1978	Bengal	Goa	Srinagar
1979	Bengal	Punjab	Coimbatore
1980	Punjab	Railways	Cuttack
1981-82	Bengal	Railways	Trichur
1983	Bengal	Goa	Calcutta
1984	Goa	Punjab	Madras
1985	Punjab	Maharashtra	Kanpur
1986	Punjab	Bengal	Jabalpur

Bengal, 82 Bengal, 83 Goa, 84 Bengal, 85 at Caltutta Bengal won vs. Assam 3–1. 86 Coimbatore: Punjab won vs. Kerala 5-4 (tie breaker).
Mir Iqbal Husain Trophy National. Sub Junior Football 1977 Bengal and Manipur, 1978 Karnataka, 1979 Assam, 1980 Assam, 1981 Assam and Kerala, 1982 Kerala, 83 Kerala beat Bengal 2–0, 84 T.N. and Bengal shared, 85 Karnataka bt Manipur 1–0. Semi: Karnataka 4, Bihar 1; Manipur 4 Bengal 2.
Nehru Cup International Football 1982 at Calcutta: Uruguay 2 China 0, 1983 at Cochin Hungary 2 China 1, 1984 at Caltutta Poland 1,

Fastest, Youngest

Fastest: *The highest speed reached in non-mechanical sports is in sky-diving, in which a speed of 185 mph/298 kmh is attained in a head-down free falling position, even in the lower atmosphere.*

Slowest: *In wresting, before the rules were modified towards "bright wrestling", contestants could be locked in holds for so long that a single bout once lasted for 11 hr. 40 min.*

Youngest Record Breaker: *The youngest age at which any person has broken a non-mechanical world record is 12 yr 298 days for Gertude Caroline Ederle (US) b.October 23, 1906) who broke the women's 880-yd freestyle swimming world record with 13 min 19.0 sec at Indianapolis, Indiana, Aug. 17, 1919.*

Oldest Record Breaker: *Gerhard Weidner (W. Germany) (b. Mar 15, 1933) set a 20 Mile Walk record on May 25, 1974, aged 41 yr 71 days.*

Youngest Champion: *The youngest individual Olympic winner was Marjorie Gestring (US) (b. Nov. 18, 1922), who took the springboard diving title at the age of 13 yrs. 268 days at the Olympic Games in Berlin, Aug. 12, 1936.*

Oldest Champion: *Oscar Gomer Swahn (Sweden) (1847-1927) was aged 64 yr 258 days when he won a gold medal in the 1912 Olympic Running Deer team shooting competion.*

Most Versatile: *Charlottte "Lottie" Dod (1871-1927) won the Wimbledon Single Tennis title five times between 1887 and and 1893, the British Ladies Golf Championship in 1904, an Olympic silver medal for archery in 1908, and represented England at hockey in 1899. She also excelled at skating and tobogganing.*

China 0. 1985 at Cochin: Soviet Union 2 Yugoslavia 1. 86 Trivandrum: Soviet Union 1, China 0.

Federation Cup Soccer: Srinagar September '86. Mohan Bagan bt East Bengal 5–4 via tie breaker.

Federation Cup Football conducted by AIFF for the champion teams of the country. 1977 at Cochin ITI Bangalore bt. Mohun Began Calcutta 1–0, 78 at Coimbatore: Mohun Began and East Bengal shared 0–0. 79 at Gauhati: BSF Jallandhur bt. Mafatlal Bombay 3–0, 80 at Calcutta: Mohun Began and East Bengal shared 1–1. 81 at Madras: Mohun Began bt. Mohd. Sptg. 2–0. 82 at Calicut: Mohun Began bt Mafatlal 1–0, 83 Cannanore: Mohd. Sptg. bt Mohun Began 2–0. 84 at Tiruchi Mohd. Sptg. bt. East Bengal 1–0. 85 at Bangalore: East Bengal bt. Mohun Began 1–0. Jamshed Nassiri scored in extra time. Semi: Began bt Salgaokar 5-4 (0–0; 1-1; 4-3 in tie breaker), East Bengal bt. Punjab State Elec. Board 2–1 (2-0, 0-1).

Durand Cup Delhi 1986 Bagan bt. E. Bengal 1-0. *IFA Shield Calcutta* Dec.85 Penarol Uruguay won vs. Shakhtjor Russia 1–0. *Rovers Cup Bombay* 85 Nov. Mohun Began 2 Salgoakar 0. *DCM Delhi* 85 Dec. South Australia Soccer Fedn. bt. East Bengal 5–4 in sudden death penalties. *Nagjee Calicut* East Bengal Calcutta won vs. Kerala XI. 2–0. *Gurkha gold cup Darjeeling* East Bengal 1 Md. Sptg 0. *Vittal Trophy Madras:* Malaysian Indian India Football Association won vs. State Bank of India Madras 4–2 in tie breaker. *Stafford Cup Bangalore:* East Bengal bt. I.T.I. Bangalore 7-6.

GYMNASTICS

World Cup Gymnastics, Beijing: 1985 World Champion Elena Shushunova of Soviet Union won women's all round gold with 39.825 points. Daniela Sillivas of Romania second (39.70), Oksana Oniegiantchick (Soviet) 39.60.

Men: Yuri Korolev (USSR) and Li Ning (China) shared men's individual gold (58-45 each).

Olympics. China, who beat USSR in the 83 World Championships, lost to new entrants USA (591.40 pts) by just 0.60 pts. Romania made most of the Soviet absence and won Women's Title.

Men: Team: 1. USA (591.40); 2. China (590.80); 3. Japan (586.70) Ind. all-around; 1. Koji Gushiken (Jpn) 118.700; 2. Peter Vidmar (USA) 3. Li Ning (Chn), Floor Exercise: Li Ning (Chn) 19.925; 2. Lou Yun (Chn), 3. Koji Sotimura (Jpn) and Philipe Vatucune (Fra) Pommel Horse; 1. Li Ning (Chn) and Peter Vidmar (USA) 19.950 3. Timothy Daggert (USA). Roman rings: 1. Koji Gushiken (Jpn) 19.950 and Li Ning (Chn) 3. Mitchell Gaylord (USA) Vaulting horse: 1. Lou Yun (Chn) 19.950; 2. Li Ning (Chn); 3. Koji Gushiken (Jpn) Mitchell Gaylord (USA) and Shinje Morisu (Jpn) - all with 19.825. Parallel bars: 1. Bart Corner (USA) 19.950; 2. Nobujuki Kajitani (Jpn), 3. Mitchell Gaylord (USA) Horizontal bar. 1. Shinji Morisue (Jpn) 20.000: 2. Tong Fei (Chn) 3. Koji Gushiken (Jpn).

Women: 1. Romania (392.20) 2. USA (391.20) 3. China (388.60). Ind. all-round: 1. Mary Lou Retton (USA) 79.175; 2. Ecaterina Szabo (Rom) 79.125; 3. Simona Pauca (Rom) 78.675 Vaulting horse: Szabo (Rom) 19.875; 2. Retton (USA) 3. Lavinia Agache (Rom). Uneven Bars 1. Me Yanhong (Chn) and Juliane McNamara (USA) 19.950; 3. Retton (USA). Balance Beam: 1. Pauca (Rom) and Szabo (Rom) 19.800; 3. Kathy Johnson (USA). Thythmics: 1. Lori Fung (Can) 57.950; 2. Doina Staiculescu (Rom) 3. Regina Webber (FRG).

28th National Gymnastics at Bangalore 85 January. Men: 1. Railways 483 pts. 2. Chandigarh 453.3, Services 419. Women: 1. Haryana 282.2. Maharashtra 262.3 W. Bengal 210.

HOCKEY

World Cup Hockey: 1971 at Barcelona 1. Pak, 2. Spain, 3. India. 73 Amsterdam: 1. Holland, 2. India, 3. W. Germany. 75. Kulalumpur: 1. India, 2. Pak, 3. W. Germany. 78. Buenos Aires: 1. Pak, 2 Holland, 3. Australia. 82 Bombay: 1. Pak, 2 W.Germany, 3. Australia. 86 at London 1. Australia, 2. England, 3. W Germany.

Olympics. 1908 Great Britain, 12 Great Britain, 28 India, 32 India, 36 India, 48 India, 52 India, 56 India, 60 Pakistan (2nd place for India), 64 India, 68 Pakistan (India lost in semi to Australia), 72 W. Germany (India lost to Pakistan in semi, Bronze for India beating Holland), 76 New Zealand (Seventh place for India), 80 India won final vs. Spain 4-3 (New Zealand, Australia, Pakistan, W. Germany, & Holland did not participate).

1984 at Los Angeles: Pak regained after 16 years beating W. Germany 2-1. Britain inducted as substitute for USSR took bronze beating formidable Australia by 3-2. Semi Pak 1, Australia 0. Better goal average took W. Germany to semifinal after holders India held them for a goalless draw. Though India under Zafar Iqbal coached by Balkrishan Singh scored as many as 15 goals, it was the only top team to concede a goal against every team (total 9) except W. Germany. India finally placed as fifth among 12 (bt US 5-1, bt Malaysia 3-1, bt Spain 4-3, drew W. Germany 0-0, lost to Australia 2-4, bt. N.Z. 1-0, bt. Holland 5-2).

Asian Games Hockey: 1958: 1. Pakistan, 2. India, 3. Korea, 62: 1. Pakistan, 2. India, 3. Malaysia. 66: 1. India, 2. Pakistan, 3. Japan. 70: 1. Pakistan, 2. India, 3. Japan, 74: 1. Pakistan, 2. India, 3. Malaysia. 78: 1. Pakistan, 2. India, 3. Malaysia. 82: Pak bt. India in final 7-1. Bronze for Malaysia who bt. Japan 3.0. 86:S Korea bt. Pakistan in final. India got bronze.

Champions Trophy Hockey: 1978 Pakistan won at Lahore. 80 Pak won at Karachi. 81 Holland won at Karachi. 82 Holland won at Amsterdam. 83 Australia won at Karachi. 84 Dec. Australia retained at Karachi beating world and Olympic champs Pak 2-0 in the six-nation tourney. India didnot participate. **Champions Trophy** 1986 at Karachi in April. West Germany won the trophy for the first time. They played 5 matches, won 3, drew 2 and lost none. Australia came second 5-2-1-2. Pakistan: 5-1-3-1, Britain: 5-1-3-1, India 5-1-1-3, Netherlands 5-1-1-3.

Inercontinental Cup Oct. 85 Barcelona, Spain. Hosts won vs. New Zealand 9–7. Third place Poland 4. Canada.

Four Nation Hockey 85 at London: 1. Holland, 2. USSR, 3. England, 4. India (India lost to USSR 0–2, Holland 0–1, England 1–2).

Junior under 21 World Hockey 85 Aug. at Vancouver. W. Germany retained vs. Holland 4–2, 3rd Pak bt. Aus 4–2 5th India.

Asia Cup Hockey 85 at Dhaka Pak won finals vs. India 3–2. Second half extra time controversial goal scored by Kalimullah, Jap. ref. Yashomito Yubuta attacked by Indian players. 6 Indians suspended by Intl. Hockey Federation. Semi: India 9 Jap 1; Pak 7, S. Korea 0, 3rd place, S. Korea 4. Jap 5. Malaysia, 6. Bangladesh, 7. China, 8. Sri Lanka, 9. Singapore, 10. Iran. Naeem of India topped with 12 goals.

Six Nation Hockey 85 Dec. at Ipoh, Malaysia. After 5 years a Hockey Championship for India Raja Aslan Shah Trophy under Mohamed Shahid bt hosts Malaysia 4–2. 3rd place Pak bt. Spain 2–1 5th place Australia bt. England 8–6. Semi: Malaysia 3 Spain 1; India 1 Pak 0 (Goal by Hardip Singh).

Emirates Hockey Jan. 86 at Dubai: India won on goal average after being tied with W. Germany on points. 3 Pak. 4. Britain.

Rangaswamy Cup National Hockey: 1928: U.P. 30: Railways. 32: Punjab. 34: Not held. 36: Bengal, 38: Bengal. 40: Bombay. 42: Delhi, 44: Bombay, 45: Bhopal 46: Punjab. 47: Punjab. 48: Bhopal. 49-51: Punjab. 52: Bengal. 53: Sevices. 54: Punjab. 55: Services & Madras. 56: Services. 57-59: Railways. 60: Services. 61: Railways. 62: Punjab. 63-64: Railways. 65: Punjab. 66: Railways & Services. 67: Madras & Railways. 68: Railways. 69: Punjab. 70: Punjab & Railways. 71-72: Punjab. 73: Services. 74-76: Railways. 77: Railways & Indian Airlines. 78: Airlines. 79: Railways. 80-83: Punjab. 84: Airlines 85 series.

National Hockey 86, Bangalore: Indian Airlines won for the fifth time, beating Indian Railways 3-2. Punjab finished third.

Nehru Cup Hockey Delhi Dec. 85: Indian Airlines won vs. Punjab Police 2–1. Bombay Gold Cup 1985 Indian Airlines won vs. Pak International Airlines 4–1.

Calcutta Beighton Cup of 90th year IA bt. EME Centre.

Murugappa Gold Cup Hockey 85 S.C. Bangalore bt. JCT Phagwara 2-1.

Womens Hockey. World Womens Hockey 83 at Kuala Lumpur 1. Holland. 2. Canada, 3. Australia, 4. W. Germany, 5. England, 6. U.S., 7. N.Z., 8. Scotland, 9. Argentina, 10. USSR, 11. India, 12. Wales.

Women Hockey: Olympics held for first time in 1980 Zimbabwe won. 1984-1. Holland 2. W. Germany, 3. U.S.A.

38th National Womens Hockey: 85 Jan. Railways retained for fifth year in a row beating Air India in tie breaker 8–7. Semi: Air India 2 Bihar 0; Railways 3, Karnataka 0.

Indira Gandhi Gold Cup Women Hockey held at Delhi 85 Nov. India & USSR shared.

SQUASH

World Open 85 Nov. Cairo Jahangir Khan 22 yr. old Pak, became first ever player to win 5 time bt. Ress Norman New Zealand 3–1.

Asian Squash Championship: Kulalampur, February '86. Pakistan won the men's title for the 3rd sccuessive time, defeating Singapore 3–0. India defeated Malasia 3–0 to finish second. Hong Kong edged out Singapore 2–1 to win Women's team title.

SWIMMING

Olympics 1984 Los Angels

Winners—Men: 100m freestyle: 1. Rowdy Galness (U.S) 49.80 Sec. 2. Mark Stockwell (Aus). 3. Per Jhonson (Sweden). 200: 1. Michael Gross (W. Ger) 1 min. 47.44 sec. (WR). 2. Michael Heath (U.S), 3. Thomas Farner (W. Ger). 400: 1. George Dicarlo (U.S) 3:51.23, 2. John Mykkanen 3. Justin Lemberg (Aus.) 1,500: 1. Michael O'Brien (U.S.) 15:05:20 2. George Dicalo (U.S.), 3. Stephan Pfeiffer (W.Ger).

100 m backstroke: 1. Rick Carey (U.S.) 55.79, 2. Davild Wilson (U.S.), 3. Mike West (Can). 200 m: 1. Rick Carey (U.S.) 2:00.23 2. Frederic Delcourt (Fra.), 3. Cameron Henning (Can).

100 m Breast stroke: 1. Steve Lundquist (U.S) 1:01.65 (WR), 2. Victor Davis (Can), 3. Peter Evans (Aus). 200 m:1. Victor Davis (Can) 2:13:34 (WR), 2. Glenn Beringen (Aus), 3. Etienne Dagon (Switz).

100 m Butterfly: 1. Michael Gross (W.Ger) 53.08 (WR) 2. Pablo Morales (U.S), 3. Glenn Buchanan (Aus). 200 m: 1. John Sieben (Aus) 1:57.04 (WR), 2. Michael Gross (W. Germany), 3. Rafael Vidal Castro (Venezuela).

200 m individual medley: 1. Alex Baumann (Can) 2:01.42 (WR), 2. Pablo Morales (U.S), 3. Neil Cochran (GB). 400 m: 1. Alex Baumann (Can) 4:17.41 (WR), 2. Ricardo Pardo (Brz), 3. Robert Woodhouse (Aus).

4 × 100 m freestyle relay: 1. US (Chris Cavanaugh, Mike Health, Matt Blondi and Rowdy (Gaines) 3:19.03 (WR), 2. Aus (Gregory Fasala, Neil Brooks, Michael Delamy and Mark Stockwell). 3. Sweden (Thomas Edistrom, Bengt Baron, Mikael Orm and Per Johnson). 4 × 200 m: 1. US (Mike Heath, David Larson, Jeff Float and Bruce Hayes) 7:15.69 (WR),. 2. Germany (Thomas Fahrner, Dirk Korthals, Alexander Schowtka and Michael Gross), 3. Britain (Neil Cochran, Paul Easter, Paul Howe and Andrew Astbury).

4 × 100 m medley relay: 1. U.S (Rick Carey, Steve Lundquist, Pablo Morales and Rowdy Gaines 3:39.30 (WR), 2. Canada (Mike West, Victor Davis, Tom Pointing and Sandy Goss), 3. Australia (Mark Kerry, Peter Eavane, Glenn Buchnan and Mark Stockwell).

Women: 100 m freestle: 1. Nancy Hogshead (US) and Carrie Steinseifer (U.S) 55.92 dead-heat) both awarded gold medals. No Silver, 3. Annemarie Verstappen (Netherlands). 200 m: 1. Mary Wayte (U.S) 1:59.23, Cynthia Woodhead (US), 3. Annemarie Verstappen (Netherlands). 400: 1. Tiffany Cohen (US) 4:07.10, 2. Sarah Hardcastle (GB), 3. June Croft (G.B). 800 m: 1. Tiffany Cohen (US), 8:24.95, 2. Michele Richardson (US), 3. Sarah Hardcastle (GB).

100 m breastroke: 1. Petra Van Staveren (Netherlands) 1:09.88, 2. Anne Ottenbrite (Netherlands) 1:09.88, 2. Anne Ottenbrite (Canada), 3. Catherine Poirot (France). 200 m: 1. Anne Ottenbrite (Canada) 2:30.38.2. Susan Rapp (US), 3. Ingrid Zempereur (Belgium).

100 m backstroke: 1. Teresa Andrews (US) 1:02.55, 2. Betsy Mitchell (US), 3. Lolanda de Rover (Netherlands). 200 m: 1. Lolanda de Rover (Netherlands) 2:12.38, 2. Amy White (US), 3. Aneta Partrascolu (Rom).

100 m butterfly: 1. Mary T. Meagher (US) 69.26, 2. Jenna Johnson (US), 3. Kerinne Seich (W.Ger). 200 m: 1. Mary T. Meagher (US) 2:06.90, 2. Karen Phillips (Aus), 3. Ina Beyermann (W.Ger).

200 m Individual Medley: 1. Tracy Caulkins (US) 2:12.64, 2. Nancy Hogshead (US), 3

Michele Pearson (Aus). 400 m: 1. Tracy Caulkins (US) 4:39.24, 2. Suzanne Landells (Aus), 3. Petra Zindler (W.Ger).

4 × 100 m Freestyle Relay: 1. US (Jenna Johnson, Carrie Steinseifer, Dara Torres and Nancy Hogshead) 3:43.43, 2.The Netherlands (Annemarie Verstappen, Elles Vosles, Pesi Reijers and Connie Van Bentum), 3. West Ger. (Iris Zscherpe, Suzanne Schuster, Christian Pielke and Karine Scich).

4 × 100 m Medley Relay: 1. US (Teresa Andrews, Tracy Caulkins, Mary T. Meagher and Nancy Hoghshead) 4:08.34, 2. West Ger. (Svenja Schilcht, Ute Hasse, Ina Beyermann and Kerinne Seich), 3. Canada (Remma Abdo, Anne Ottenbrite, Michele McPherson and Pamela Rae).

Madals Table: U.S. 21—13—0—34, Canada 4—3—10—17 W. Germany 2—3—6—11, The Netherlands 2—1—3—6, Australia 1—5—6—12, Britain 0—1—4—5, France 0—1—1—2, Brazil 0—1—0—1, Sweden 0—0—2—2, Belgium 0—0—1—1, Romania 0—0—1—1, Switzerand 0—0—1—1, Venezula 0—0—1—1. (Two golds awarded to U.S in the women's 100 m freestyle after a dead heat. No Silver).

Asiad '86, Seoul: Men: 100 M Freestyle: Fujiwara Katsunori, Japan 00:51.56 (Record); 2. Shen Jianquiang China; 3. Ang Peng Seong Singapore. 200 M Freestyle: Fujiwara Katsunori Japan 01:52.32 (Record); 2. Ogata Shigeo Japan; 3. Shen Jianquiang China. 400 M Freestyle: Xie Jun China 4:00.35 (Record); 2. Ogata Shigeo Japan. 1500 M Freestyle: Wang Dali China 15:50.93 (Record); 2. Ogata Shigeo Japan; 3. He Runhua China.

Men 100 M Back Stroke: Suzuki Daichi Japan 00:57.39 (Record); 2. Maruyama Shigemori Japan; 3. Wang Hao China. 200 M Back Stroke: Ikeda Kazuya Japan 01:05.13 (Record); 2. Lin Laijin China; 3. Maruyama Shigemori Japan. 100 M Breast Stroke: Jin Pu China 1:04.02 (Record); 2. Fuwa Hisashi Japan; 3. Watanable Kenji Japan. 200 M Breast Stroke: Watanabe Kenji Jpan 02:20.07 (Record); 2. Matsuda Naritoshi Japan; 3. Sugriat Wirmandi Indonesia.

Men 100 M Butterfly: Miura Hiroshi Japan 00:54.64 (Record); 2. Zheng Jian China 3. Sato Hiroshi Japan. 200 M Butterfly: Sato Hiroshi Japan 02:01.06 (Record); 2. Khazan Singh Tokkas India; 3. Tanaka Yukinori Japan.

Men 200 M: Individual Medley: Matsuda Naritoshi Japan 01:05.48 (Record), 2. Chen Qim China; 3. Takeda Saatoshi Japan. 400 M: Medley: Matsuda Naritoshi Japan 04:27.99 (Record), 2. Takeda SAtoshi Japan; 3. Tian Liang China.

Men 4×100 Medley Relay: 1. Japan 03:46.55 (Record); 2. China; 3. Indonesia. 4×100 Freestyle Relay: 1. China 03:27.51 (Record); 2. Japan; 3. Singapore. 4×200 Freestyle Relay: 1. Japan 07:36.07 (Record); 2. China; 3. Singapore.

Men Springboard diving: Tan Liangde China (678.24); 2. Xu Wenzhan China; 3. Lee Sun Gee. Platform Diving: Tong Hin China; 3. Kane to Keita. Water Polo: 1. China; 2. Korea; 3. Singapore. Women: 100 M Freestyle: Shimao Yoko, Japan 00:57.62 (Record); 2. Xia Fujie, China; 3. Huang Hong China. 200 M Free Style: Nakamori Chikako, Japan 02:05.21 (Record); 2. Saito Miki, Japan; 3. Abdulla, Nurul Huda, Malasia. 400 M Free Style: Yan Ming, China 04:15.61 (Record); 2. Abdulla Nurul Huda Malasia, 3. Wakahoi Miki, Japan. 800 M: Free Style: Yan Ming, China 08:43.42 (Record), 2. Abdulla Nwoul Huda, Malasia, Wakahoi Miki, Japan.

Women 100 Back Stroke: Choi Yeon Hee, Korea 01:04.62 (Record); 2. Sekido Kaoru (Japan); 3. Harada Hiroyo Japan. 200 M: Back Stroke: Choi Yeon Hee, Korea 02:18.33 (Record); 2. Sekodo Naomi, Japan; 3. Harada Hiroyo Japan.

Women 100 Breast Stroke: Huang Xiaomin, China 01:12.70 (Record); 2. Nagasaki Hiroko, Japan; 3. Xia Fujie, Japan. 200 M: Breast Stroke: Nagasaki Hiroko, Japan 02:34.01 (Record); 2. Natsume Asako, japan; 3. Park Soung Won, Korea.

Women 100 M: Butterfly: Qian Hong, China 01:01.36 (Record); 2. Kawahigashi Yoko, Japan; 3. Takahasi Kiyomi Japan. 200 M: Butterfly: Kawahara Izumi, Japan 02:12.83 (Record); 2. Takahashi Kiyomi (Japan); 3. Lee Eun Hee Korea. 200 M: Individual Medley: Sekido Naomi, Japan 02:21.02 (Record), Harada Hiroyo 3. Choi Yeon Hee, Korea. 400 M: Individual Medley: Yan Ming, China 04:52.43 (Record); 2. Sekido Naomi, Japan; 3. Abdulla Nurul Huda, Malasia.

4×100 Free Style Relay: 1. China (3:52.21 Record); 2. Japan; 3. Hong Kong. 4×100 Medley Relay: 1. Japan (04:16.07 Record); 2. China; 3. Korea. Spring Board Diving: Zhang Yuping (China); 2. Li Qiaoxian (China); 3.

Motobuchi Yuki (Japan). Platform Diving: Lu Wei China; 2. Xu Yanmei, China; 3. Kihara Yayoi Japan.

National Aquatics: Ahmedabad, November '86: Railways once again proved their overall supermacy winning the men's title with 148 points. Police came second (121) with Services (70) and Maharashtra (54) behind. Women's title went to Karnataka (115). Last year's champion Maaharastra was pushed back to second (102). Bengal (49) was third.

Khazan Singh Tokkas, the Asiad Silver medalist won the men's individual title with 7 golds. He became the fastest male swimmer winning 100 M: Freestyle in 55.21, a national record.

Lorraine Varghese of Karnataka who won 2 gold, 4 silver and 2 bronze got the women's individual title.

TABLE TENNIS

World Cup Beijing Aug. 85 Chen Xinhua, China captured 6th World Cup vs. Andrzej Grubba Poland 21–16, 21–15, 21–11. Current Champ Jiang Jialing, China finished third vs. Chen Longean China 21–16, 22–20.

U.S. Open: Cheng Yinghua China bt. holder Wen Chia, Taiwan 3 – at Miami Beech June 85. Women: Li Huibeng, China bt. Cao Yanhua, China 3 – 0.

Asia Cup: Chen Longean, China bt. world champ Jiang Jialing, China 3–1 at Singapore Sept 85. Women: Jiau Zhimin, China bt Ni Xia Lian, China 3–0.

Asian Games: Team Men: 1. Korea; 2. China; 3. Japan. Women: 1. Korea; 2. China. Men Singles: 1. Yoo Nam Kyu, Korea; 2. Hui Jun, China; 3. Miyazaki Yoshihito, Japan and Kim Wan, Korea. Men Doubles: 1. Teng Yi and Hui Jun (China); 2. Kim Wam and Yoo Nam Kyu (Korea).

Women Singles: 1. Jaid Zhimin China; 2. He Zhili, China; 3. Yang Young Ja, Korea and Hoshino Mika, Japan. Women Doubles: 1. Dai Lili and Geng Liguan, China; 2. Jaid Zhimin and He Zhili, China.

India Cup: Men's Singles: Kamalesh Mehta bt: Mangit Dna 21–10, 17–21, 21–15, 21–8. Women's singles: Indu Puri bt Monalisa Barua 21–15, 14–21, 21–12, 21–18.

47th Junior National: New Delhi: Boys: West Bengal bt Utter Pradesh (3–1). Sub Junior Boys: Punjab bt Bengal (3–1). Girls: Madhya Pradesh bt Assam (3–2). Sub Junior Girls: Madhya Pradesh bt Kerala (3–1). Boys Individual: Nupur Santra (Bengal) bt Ganesh Kundu (Bengal) 21–14, 24–22, 22–24, 21–18. Girls Ind: Vineetkumar Gulati (Punjab) bt Shilpa Takalkar (Maharashtra) 17–21, 23–21, 18–21, 21–18, 21–15.

47th National: Bhopal: Men's team title for Maharashtra A who bt Delhi 5–1. Assam won women's title bting: Maharashtra A 3–1. Ind: Men: Kamalesh Mehta won for the third time in 4 years, defeating Arun Jyoti of Assam. Ind. Women: Monalisa Barua of Assam won women's title bting: Vyoma Parekh 21–19, 21–23, 21–17, 21–18.

TENNIS

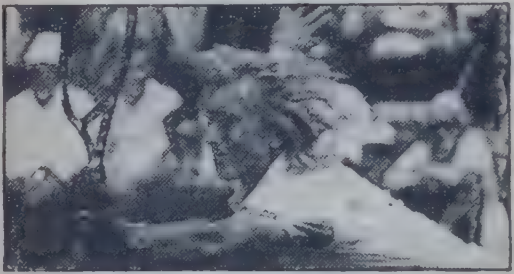
Davis Cup finals Dec. 85. Munich. Sweden retained vs. W. Germany 3–2. Mats Wilander bt. Michael Westphal 6–3, 6–4, 10–8. Stefan Edherg lost to Boris Becker 3–6, 3–6. M. Wilander and Joatim Nystroam bt. B. Backer and Andrews Maurer 6–4, 6–2, 6–1. M. Wilander lost to B. Becker 3–6, 6–2, 3–6, 3–6. Stefan Edberg bt. Michael Westphal 3–6, 7–5, 6–4. 6–3.

Federation Cup Women's Tennis 86: Prague, Czechoslovakia. United States dethroned hosts Czechoslovakia to win back the title. Martina Navratilova played on her native soil, but against her old home land which added to the drama of the encounter.

Wimbledon 86: London, July. 100th year of the Wimbledon Tennis Championship saw the holders Boris Becker and Martina Navratilova retaining their crown – it was Martina's 7th singles title 5th in a row, equalling Dorothy Lambert Chambers. Only Helen Willis Moody is ahead of her with 8 titles.

Men: Becker bt Ivan Lendl 6–4, 6–3, 7–5. Becker kept up his record of invincibility at the Wimbledon. The only set back was in debut year '84 when he retired hurt.

Martina – Programmed For Success



She can't be blamed if she said she can't keep count of her victories, for, Martina Navratilova has been doing just that for quite some years now. Martina in tennis is what Edwin Moses is in atheletics. Both have proved their invincibility over and over again.

On October 16, 1986 at Filderstadt, West Germany, Martina blasted out Natalie Tauziat of France 6–3, 6–2 - that 51 minute long straight set affair won the champion's 1000th victory. The tournament organisers presented her with a miniature gold tennis ball hung on a necklace. The figure 1000 was engraved on the ball.

Martina's success story has becomes so steady that it has acquired a kind of monotomy. What is news in her failure which is a rare phenomenon. Her power and precision are so acute that one of the top woman tennis stars commented: it is time some one considered the possibility of shifting Martina from the women's section to the men's!

Like her diet, her mind and body also seem to be computer controlled! Programmed for success. Her tennis income crossed 10 million mark in early 86. She is the richest living thing moving on any tennis court.

Women: Martina bt Hana Mandlikova of Czechoslovakia 7–6 (7–1) 6–3. Martina won a double when she, teaming with Pam Shriver bt Hana and Wendy Turnbull 6–1, 6–3 in doubles.

U.S. Open: New York, September '86. Men: Ivan Lendl bt Miloslav Mecir of Czechoslavakia 6–4, 6–2, 6–0. Women: Martina Navratilova bt Helena Sukova of Czechoslavakia 6–3, 6–2. Men's Doubles: Andres Gomez and Slobodan Zivojinovic bt Joakim Nystrom and Mats Wilandar 4–6, 6–3, 6–3, 4–6, 6–3. Women's Doubles: Martina and Pam Shriver bt Hana Mandilikova and Wendy Twinbull 6–4, 3–6, 6–3.

French Open: Paris June '86. Men: Ivan Lendl bt Mikael Pernfors of Sweden 6–3, 6–2, 6–4. Women: Chris Evert Lloyd won for a record 7th time beating Martina 2–6, 6–3, 6–3. Men's Doubles: Tomas Smid and John Fitzgerald bt Andres Jarryd and Stefan Edberg 6–3, 4–6, 6–3, 6–7 (4–7) 14–12. Women's Doubles: Martina and Andrea Tameswari bt Stefi Graf and Gabriela Sabatini 6–1, 6–2.

U.S. Indoor Tennis Memphis: Brad Gilbert bt Stefan Edberg 7–5, 7–6 (7–3). Ken Flach and Robert Seguso bt Guy Forget and Andres Jarryd 6–4, 4–6, 7–6 (7–5).

International Junior Tennis: Karachi Zeeshan Ali of India bt Zubin Irani 6–4, 6–3 - Zeeshan completed a hatrick winning at Dhaka, Madras and Karachi.

All India Hard Court Tennis, Kota: Men: Enrico Piperno of West Bengal bet Nandan Bal 6–4, 6–2. Women: Amrita Balachandran of Tamil Nadu bt Bela Pandit of Maharashtra 6–3, 6–2.

J.A.L. Cup International Tennis, Fujisawa, Japan: Zeeshan Ali of India won boys singles out-playing Hubert Karrasch of Canada 6–4, 1–6, 6–4.

National Tennis at Bangalore 85 ***Men:*** Nandan Bal bt. Narendra Nath of A.P. 6-4, 6-4. ***Women:*** Radhika Krishnan of T.N. bt. Bela Pandit, Mah 4-6, 6-4, 6-4. Doubles: Radhika and Bela Pandit bt. Nandan and Enrico Piperno. Vet. Singles: Akhtar Ali. Jr. National Champ, Zeeshan Ali, 16 year s/o. former Davis Cupper Akhtar Ali, won the under 16 and under 18 singles and doubles.

VOLLEYBALL

Olympics:

1964 Russia (Women Jap), 68: Russia (Russia), 72: Japan (Russia), 76: Poland (Jap), 80 Russia (Russia), 84 at Los Angeles: USA bt. Brazil 15-6, 15-6, 15-7. Women: China who went down to US 1-3 in prelim, bt them in finals 16-14, 15-3, 15-9.

World Super Women's Volley: 1984 Nov. at Hong Kong: China won.

Asian Games:

1954: 1. India, 2. Japan. 58: 1. Japan, 2. Iran, 3. India. 62: 1. Japan, 2. India, 3. Pakistan. 66: 1. Japan, 2. Korea, 3. Taiwan. 70: 1. Japan, 2. S. Korea, 3. Taiwan. 74: 1. Japan, 2. S. Korea, 3. China. 78: S. Korea, 2. Japan, 3. China. 82: 1. Japan, 2. China, 3. Korea. 86: 1. China, 2. Korea, 3. India.

Women: 66: 1. Japan, 2. Korea, 3. Iran. 70: 1. Japan, 2. South Korea, 3. Cambodia. 74: 1. Japan, 2. Korea, 3. China. 78: 1. Japan, 2. China, 3. S. Korea. 82: 1. China, 2. Japan, 3. Korea. 86: 1. China, 2. Japan, 3. Korea.

Nationals:

1952: Mysore, 53: Delhi, 54: Punjab, 55: Punjab, (Women-U.P.), 56: Punjab (U.P.), 57: Services (Punjab), 58: Delhi (Punjab), 59: Railways (Punjab), 60: Services (Punjab), 61: Railways (Punjab), 62: Punjab (Punjab), 63: Punjab (Madras), 64: Railways (Madras), 65: Hyderabad (Punjab), 66: Services (Andhra), 67: Services (Andhra), 68: Punjab (Punjab), 69: Punjab (Andhra), 70: Punjab (Punjab), 71: Punjab (Not held), 72 & 73: Punjab (Kerala), 74: Karnataka (Bengal), 75: U.P. (Kerala), 76: Tamil Nadu (Kerala), 77: Services (Bengal), 78: Punjab (Railways), 79: Punjab (Bengal), 80: Railways (Kerala), 81: Punjab (Railways1, 82: Haryana (Kerala), 83: Railways (Kerala), 84: Railways (Railways).

National Volley 85 Dec. Delhi - Women: Kerala bt. T.N. 15-5, 15-6, 10-15, 14-16, 15-11. Rlys won third place vs. Punjab 3-1. Men: Rlys won for third time in a row vs. Haryana 18-16, 15-13, 15-8 - Kerala finished third vs. T.N. 3-2.

Federation Cup Volley ball: Badagara, February 86. Railway men lifted the Shivanthy Adithyan Cup. In the final super league match they bt national runner up Haryana 10–15, 15–11, 15–13, 15–12. In women's section too Railway won, beating Punjab 15–2, 15–13, 15–4.

Junior National Volley 1985 Oct. Chandigarh: A.P. boys bt. Karnataka 9-15, 15-3, 15-12, 15-8 to win 5th time in row. T.N. girls won vs. Mah. 15-4, 15-9, 15-7.

WEIGHT LIFTING

World Championship:

Moscow Dec. 1983. Nineteen world records set, and went down as the greatest in the history of the Iron Sport. Anatoli Pisarenko of USSR emerged as the strongest man on Planet Earth.

Fly weight 52 Kg: 1. Terziski, Bulgaria 260, 2. Jacek Gutowski, Poland, 3. Stefan Lelatko. Terziskis's Jerk of 150 Kgs is a new world record. Bantam 56 Kg: 1. Oksin Mirzoyan, USSR 292.5, 2. Sulemainov, Bulgaria, 3. Andreez Letz, GDR. Sulemainov set world record in snatch of 130 Kg. Letz also world record in total of 292.5. Feather 60 Kg: 1. Yuri, USSR 312.5, 2. Topurov, Bulgaria, 3. Radu Gelu, Romania. Sarkisyan set world record in total of 312.5. Light Weight 67.51: 1. Joachin Kunz, GDR 340, 2. Yanko Rusev, Bulgaria, 3. Andrees Behm, GDR. Middle Weight 75 Kg: 1. Varbonov, Bulgaria 370, 2. Kuznetsov, USSR, 3. Stoichkov, Bulgaria. Light Heavy 82.5: 1. Uri Vardanian, USSR 392.5, 2. Asen Zlatev, Bulgaria, 3. Barsi Hungary. Vardanians 180.5 in snatch world record. Middle Heavy 90 Kg: 1. Blagoi Blagoev, Bulgaria 417.5, 2. Solodov, USSR, 3. Piotrowski, Poland. 230 Kg Jerk by Solodov is world record. Heavy 100 Kg: 1. Kazneitsov, USSR 422.5, 2. Popov USSR, 3. Komar, Poland. Super Heavy 110 Kg: 1. Vicheslev Klokov, USSR 440, 2. Jasco, Hungary, 3. Anton Baraniak, Czech. Klokov set world records in Jerk 247.5 and total 440. Over 110 Kg: 1. Anatoli Pisarenko, USSR 450, 2. Alexander Kurlovich, USSR, 3. Antonio Krastev, Bulgaria.

Olympics 1984:

Fly weight: 1. Zeng Guoquiang, China 235.0 Kg, 2. Zhou Peishum, China, 3. Kazhushito, Manabe, Jpn. Bantam: 1. Wu Shude, China, 267.5, 2. Lai Runming, China, 3. Masahiri Kotake, Japan. Feather: 1. Chen Weiquang, China 282.50, 2. Gelu Rade, Rom, 3. Wenyee Tsai Tpe. Light weight: 1. Yao Jingyuan, Chn, 320, 2. Andrei Socaci, Rom, 3. Jouni Gronman Fin. Middle: 1. Karl Heinz Radshinsky, FRG 340, 2. Jaques Demers, Can. 3. Dragomir Cioroslan, Rom. Light heavy: 1. Petre Becheru, Rom, 355, 2. Rober Kabbas, Aus. 3. Ryoji Isaoka, Jpn. Middle Heavy: 1. Nicu Vlad, Rom, 392.5, 2. Dimitru

Petre, Rom. 3. David Mercer, GBR. Heavy: 1. Rolf Milser, FRG 385, 2. Vasile Gropa, Rom. 3. Pekka Neimi, Fin. Super heavy: 1. Norberto Oberburger, Ita. 390 2. Stefan Tasnadi, Rom. 3. Guy Carlton, USA. Over 110 Kg: 1 Dinko Lumkin, Aus. 412.5, 2. Mario Martinetz, USA, 3. Manfred Nerlinger, FRG.

Asian Games: upto 52 KG: 1 He Zhuoqiang China (247.5 Record), 56 KG 1 Hi Yingqiang China (265); 60 KG: Lai Running China (285 Record), 67.5 KG: Yao Jing Yuan China (307.5 Record); 75 KG: Cai Yanshu China (340 Record); 82.5 KG: Isaoka Ryogi Japan (367.5 Asian Record); 90 KG: Chun Byung Kook Korea (337.5 Record), 110 KG: EL Homsi Issam Libya (352.5 Record), Over 110 KG: Lee Minwoo Korea (382.5)

37th National Calcutta. National records shattered 21 times. Services 419 points and 26 medals (a gold, 8 silver, 9 bronze) won Burdwan Challenge Trophy for 8th time. 2. Rlys 393 points and 25 medals (16-8-1). 3. T.N. 356 points and 9 medals (1-3-5)

Lifter of the year: Jagmohan, Rlys Results: 52 Kg. 1. Mahendran, Services 2. M.V. Manikyalu Andhra 3. G. Muthuswamy, Ser. 56 Kg: 1. Parvesh Chander, Rly 2. D. Akhilan, TN 3. Anil Pate Mah. 60 Kg: G. Devan, Rly 2. Tamilselvan, T.N. 3. S. Devan, T.N. 67 Kg: 1. Jagmohan Sapra, Rly. 2. Mukilva nan, Rly. 3. Thangamani, Rly. 75 Kg: 1. Harnek Singh, Rly 2. G.B. Khatrack, Mah. 3. K.D. Mondal Bengal. 82.5 Kg: Daler Singh, Ser. 2. Hardeep Singh, Rly 3. Rajendar Pal, Ser. 90 Kg: 1 Meherchand, Ser. 2. Tarlok Singh, Ser. 3. V.M. Mangaoker, Mah. 100 Kg: 1. Tara Singh, Rly. 2. Vispi Daroga, Mah. 3. Major Singh, M.P. 110 Kg: 1 Naville Daroga, Rly 2. S.K. Khola, Rly 3. Keval Singh, Ser. Over 110 Kg: Balwinder Singh, Rly. 2. Rajinder Singh, Delhi 3. V.B. Rane, Central Secretariat

WRESTLING

Olympics 1984:

Freestyle. 48 Kg: 1. Robert Weaver (USA) 2. Takashaka Ine (Jpn) 3. Gab-do Son (Kor). 52 Kg: 1. Saban Trestena (Yug), 2. Kim Jong Kyu (Kor) 3. Yuji Takada (Jpn). 57 Kg: 1. Hideaki Tomiyama (Jpn) 2. Barry Davis (USA) 3. Kim Eui-Kon (Kor). 62 Kg: 1. Randy Lewis (USA) 2. Kosei Akaishi (Jpn), 3. Lee Jung-Keun (Kor). 68 Kg: 1. You in-Tak (Kor) 2. Andrew Rein (USA), 3. Jukka Rauhala (Fin). 74 Kg: 1. David Schultz (USA), 2. Martin Knosp (FRG) 3. Saban Seidi (Yug) 82 Kg: 1 Mark Schultz (USA). 2. Hideyuki Nagashima (Jpn) 3. Chris Rinke (Can). 90 Kg: 1. Ed Banach (USA) 2. Akira Ohta (Jpn) 3. Noel Loban (GBR) 100 Kg: 1. Leo Banach (USA). 2. Joseph Atiyeh (Syr) 3. Vasile Puscasu (Rom). 100 and above: 1. Bruce Baumgartner (USA) 2. Bob Mille (Can) 3. Avhan Taskin (Tur).

Greco Roman. 48 Kg: 1. Vincenzo Maenza (Ita) 2. Markus Scherer (FRG) 3. Ikuzo Saito (Jpn). 52 Kg: 1. Atsuji Miyahara (Jpn) 2. Daniel Aceves (Mex) 3. Bang Dae-Du (Kor). 57 Kg: 1. Pasquale Passarelli (FRG) 2. Masaki Eto (Jpn) 3. Haralambos Holidis (Gre). 62 Kg: 1 Kim Weon-Kee (Kor), 2. Kentolle Johansson (Swe) 3. Hugo Dietsche (Switz). 68 Kg: 1. Vlado Lisiak (Yug) 2. Tapio Sipila (Fin) 3. James Martinez (USA). 75 kg: 1. Jouko Salomaki (Fin) 2. Roger Tallroth (Swe) 3. Stefan Rusu (Rom). 82 Kg: 1. Ion Draica (Rom) 2. Dimitrios Thanopoulous (Gre) 3. Soren Claeson (Swe). 90 Kg: 1. Steven Fraser (USA), 2. Ilie Matei (Rom) 3. Frank Andersson (Swe). 100 Kg: 1. Vaseile Andrei (Rom) 2. Greg Gibson (USA) 3. Josef Tertelje (Yug). Above 100 Kg: 1. Jeffrey Blantnick (USA) 2. Refic Memisevic (Yug) 3. Victor Dolipsch (Rom). □

SPECIAL FEATURE

SEOUL '86 A REHEARSAL FOR SEOUL '88

Looking back, one feels that typhoon *Abby* which crossed the shores south of the 38th parallel in late September, was a hanbinger of many exciting things to follow.

It was raining in Seoul when the Yonggo rums heralded the opening of the Xth Asian ames on 20th September. But later the rain ried out and the sun smiled on the *land of norning calm*. An entirely different kind of yphoon swept across the stadia in the city for e next 14 days, shattering many dreams nd giving birth to new hopes and new eroes. There were winners, there were sers. But when one sums up everything, here was only one winner. That was South orea, the host.

South Korea were the winners, both on and outside the field. On the field they proved how far they have come up in Asian Sports by losing only to China in the medal tally. Outside the field they proved their capability in hosting such a mega show like the Asiad, the Olympics to follow facilities were superb and they knew how to make use of them.

Guns and Smiles. The atmosphere in Seoul was electric with tension once the game was on. The authorities were faced with grave threats from those opposing the games. In this respect the Seoul Asian

Games Organising Committee deserves more credit for having seen to it that nothing untoward happened during the games. With swarms of antiterrorism squads patrolling every nook and corner, Seoul was anything but the land of morning calm. Make one wrong move, you face the sten gun — that was the story.

But, one who visited Seoul during the games still wonders at the paradox he found in the city. With the gun-weilding grave looking security men standing, on the alert, behind them, pretty faces and colourful dressed smiled at the visitor. There was an explosion at the Kimpo International Airport a few days before the Games. But it didn't break the rhythm of excitement. People seemed to be unaware of the tension around them. There was absolutely not a shade of uneasiness on their faces. Guides and volunteers, all young students from the universities — thousands of them — were everywhere all smiles, helping you about. So what if their attempt at the King's language was miserable! They talked through their smiles, through their love.

The SAGOC had no hesitation to admit that the tenth Asiad was more a dress rehearsal of the Olympics to come. And the visitor, while leaving the city, had no doubt that the rehearsal was a success on the grander scale.

While Abby was passing over the city unleashing its fury, on the 20th of September, the gigantic Olympic Stadium bloomed in all its exotic orient splendour. The opening ceremony of the Games was a symphony of colour and rhythm, weaved out from the traditional folklore of South Korea. The motto for the sports festival of three billion youth of Asia was 'Ever Onward'.

Koreans Ahoy! Seoul Asiad set a record in the number of events and participants. There were 25 events including judo, taekwondo and bowling which were introduced for the first time. 4,800 atheletes from 27 countries participated in a fortnight of extravaganza. As predicted, the climate was pleasantly cool except for the occasional rain, the competition on the track and in the field, hot red hot.

Looking at the medal tally, one realises that things have not changed much since the Delhi Asiad of 82. The trinity of the Continent, China, Japan and Korea once again proved that the other Asian countries are practically non entities in the field of sport. There was only one tilt in the tally. Japan gave way to (was forced out by) South Korea. China remained at the top. In fact, this tilt in the power balance is the story of the tenth Asian Games.

Right from the beginning, South Korea was the centre of attraction. Not merely because they were the hosts. Even before the count down began, they had struck the warning bell — 'watch out Japan, we are ready'. They had realised that this was the right time to move up. Their atheletes had undergone the kind of training on a 'never-before' scale. Seoul, their home city, was the right place to flex their muscles. They did just that and won.

Target Japan. What is noteworthy is that it was Japan, not China, who was their target. Kim Jip, head of the Korean contingent, was expressing the mind of South Korea when he admitted that China was too strong for them. Perhaps history would also be one of the reasons for their rivalry with Japan. But things took such a dramatic turn that on the final day of the Games, it was China, not Japan, who got a shiver up their spine. Korea and Japan were locked in a golden tie with 92 apiece. With only six events to go on the last day, it was more or less anybody's games.

Four relays and marathon on the track and football final. But Japan upset the Korean dream of topping the table, by winning the men's marathon and the women's 4 × 100 relay. China won the men's 4 × 100 and 4 × 400. India won the women's 4 × 400. Korea won the football final. The final gold tally was a close one-China 94 and Korea 93, Japan way behind with 58.

The Korean upsurge was sensational. The Stadia in and around Seoul reverberated with Korean victory songs. Some from quite unexpected venues. At the Seoul National University Gymnasium, for example, no one expected China's supremacy in Table Tennis would be questioned. But the Korean men's team defeated the World Champion in style for the gold. Songnam Stadium is another example. For those who expected an India-Pakistan men's hockey final, it was a jolt. India was out in the semi itself. And the

Koreans downed another world champion — Pakistan in the finals. In women's hockey, in badminton, in taekwondo, in boxing... it was Korea all the way.

In Arachony, out of 25 golds South Korea won 9. Boxing had 12 golds to offer, all of them were grabbed by the hosts. Likewise in taekwondo, their national sport, Korea won 7 out of 7.

China's forte was mainly Gymnastics where they won 12 out of 25 golds, rowing where 7 out of 8 were for them, shooting (15/34), weight lifting (5/9), atheletics (17/43) and basketball and volleyball in the games. Japanese swimmers once again proved that they have very few challenges in this part of the world. They won 17 out of a total of 48 golds.

Far Behind. After number 3, can number 4 be far behind? It can, in the case of Asian sports. After Japan which won 58 golds comes Iran with (Sic) 6 golds! Japan won a total of 211 medals. Iran has 22§ India who sent the third largest contingent to Seoul, behind Korea and China, bagged 5 golds, a total of 37. There is no need of any other evidence to prove that Asian Sports has not improved much in all these years. For quite sometime the fight has been between China, Korea and Japan.

India who finished fifth in Delhi Asiad, failed once again to move up even in the absence of North Korea. North Korea was the fourth country in Delhi. This time it was not India but Iran, seventh in Delhi, who moved up to grab the space. What's happening? The answer is simple. Nothing! Inspite of all those multimillion facilities that came up during Delhi Asiad, India has done nothing substantial to improve the miserable situation.

Usha × Six. P. T. Usha had to carry the burden of 400 and odd of her teammates on her shoulder and run in six races within a span of six days to bring the tricolour into the Olympic Stadium. She ran two sprints, one middle distance, one hurdles and two relays, won four gold in record time and a silver. The only event that left her, and India, was 4 × 100 relay. No one in and around the Asiad arena saw any logic in her fighting six races. But it was the only logic India could find to win some gold!

Usha won silver in 100 mtrs. (11.67 secs.) gold in 200 (23.44 sec.) 400 (52.16), 400 hurdles (56.8) all new records. She bettered the record in 100 mtrs. too) anchored the 4 × 400 relay team which included M. D. Valsamma, Shiny Abraham and Vandana Rao, to win a record gold in 3:34.58.

Atheletics, for India, began literally on the wrong foot. Chand Ram the captain and gold winner in Delhi, finished third in 20 km. walk. Last Asiad's shotput record winner Bahadur Singh was no were near the medal. The other winners in Atheletics were Shiny Abraham (silver in 400 mtrs.), Manjith Singh (Bronze in discus throw) and Suman Rawat (Bronze in 3000 mtrs.)

Shocking. The biggest tragedy for India came in women's 800 mtrs. when Shiny Abraham cut the lane and was disqualified. One sure gold was thus grabbed away. Shiny actually finished the race with a lead of not less than 30 mtrs. infront of the Korean girl Chun Ae Lim who was eventually declared winner.

Apart from atheletics, the only gold for India was won by Kartar Singh in 100 kg. free style wrestling. Out of 37 medals India won, nine came from atheletics, 9 from boxing, 2 from equistrian, 3 from badminton, 2 from hockey, 4 from judo, 3 from shooting, 1 from swimming, 1 from volleyball, 1 from weight lifting, 3 from wrestling and 1 from yachting.

Soma Dutta in shooting and Khazan Singh in swimming won silver. Indian volleyball team did a tremendous job in winning the bronze from among the giants in the field.

Seoul Asiad saw II world records broken, all of them in archery. 90 new Asian records were born, 224 new Asian Games records.

When one remembers the Seoul Asiad, certain faces come etched out from a hazy crowd. Japan's Shigenobu Murofushi who, for the fifth consecutive time won the hammer gold, Korea's Chun Ae Lim, the hungry looking slum girl who came from sheer poverty and won three golds, Japan's Fujiwara Katsunori who swam for four golds and a silver, and of course the one and the only Li Ning of China the super gymnast who won four golds and two silver.☐

LOOKING BACK ON 1986

National Events

January

1. India's first radio mobile telephone and radio paging services commissioned at New Delhi.

6. Prime Minister, Rajiv Gandhi announces a grant of Rs. 1 crore to the Bharat Scouts and Guides at the 10th National Jamboree at Bangalore; Cold wave takes a toll of 160 lives.

7. Prime Minister, Rajiv Gandhi christens 2.34 metre giant telescope at Kavalur Observatory which has been named after Dr. M. K. Vainu Bappu, founder of the Indian Institute of Astrophysics.

10. Pakistan decides to lift 8-year-old ban on private trade with India. 'Rasta Rokho' agitation in Punjab fails to evoke any public response; Filmostav '86 begins at Hyderabad.

11. Union Government declares Ladakh a Scheduled Tribe area under a constitutional amendment order by the President, applying article 342 for the first time to Jammu and Kashmir; MiG-27, an all-weather supersonic strike air craft, inducted into Indian Air Force.

13. Indian Airlines creates history when her 44-Seater Fokker Friendship aircraft of IC 258 from Silchar to Calcutta had all women crew. It was commanded by Saudamini Deshmukh and copioleted by Nivedita Bhasin.

14. Indian official stationed at Indian Consulate General in Toronto, Inderjit Singh Bindra seeks political assylum in Canada. General K. M. Kariappa, the first Commander-in-Chief of the Indian Army made Field Marshall.

16. Union Government under the orders of Mathew Commission conducts quick de novo limited census in 54 villages in Fazilka and Muktsar tehsils in Punjab to decide whether they should be transferred to Haryana in lieu of Chandigarh.

17. Government of India announces 26-year-upper age limit for Civil Service Examinations with effect from 1987; India and Bangladesh agree on a joint study on sharing Ganga water.

18. Ashok Mitra, West Bengal's Minister for Finance and Planning resigns.

19. 3 Union Ministers — Arjun Singh, T. Anjiah and Naval Kishore Sharma quit for party work. Arjun Singh inducted into the newly created Congress Vice Presidentship; Rajya Sabha Vice Chairman Mrs. Najma Heptulla also quits to become Congress General Secretary. Anjiah and Kishore made Congress General Secretaries.

20. P. Shiv Shankar (Andhra) and Chandrasekhar Singh (Bihar) reinducted into Union Cabinet. Dy. Minister P. Chidambararm (Tamil Nadu) promoted as State Minister. P. A. Sangma appointed State Minister for Labour with independent charge; Pakistan's Special Court sentences 3 Sikh hijackers of Indian Airlines Flight to Lahore in 1984 to death and severe life imprisonment.

22. Satwant Singh, Balbir Singh and Kehar Singh sentenced to death by Delhi Addl. District & Sessions Judge, Mahesh Chandra for the murder of former Prime Minister, Indira Gandhi on Oct. 31, 1984.

23. 38 persons including 25 foreigners die in fire in five-star Sidharth Continental Hotel in Delhi; Director General of the Council of Scientific and Industrial Research, Dr. S. Varadarajan replaced by Prof. Yesh Pal, Secretary, Department of Science & Technology. Dr. Vardarajan appointed Chief Consultant to Planning Commission.

25. Social workers Baba Amte, Dr. Avtar Singh Paintal and Kathak exponent Birju Maharaj get Padma Vibhushan in Republic Day honours; 29 senior offices of the armed forces including Lt. Gen. A. K. Handoo, Lt. Gen. P. N. Hoon and Maj. Gen. Shiv Kumar Sharma win PVSM; Transfer of Chandigarh to Punjab deferred as Mathew Commission fails to demarcate Hindi-speaking areas to be transferred to Haryana.

27. Two senior Ministers of State, Chandulal Chandrakar and K. P. Singh Deo implicated in Ram Swarup Spy scandal, resign from the Union Council of Ministers; M. S. Sanjeevi Rao, Chairman of the Electronics Commission resigns.

Febrauary

1. Pope John Paul II arrives in New Delhi for a 10 day-visit to the country; Union Government announces steep hike in prices of petroleum products; Staff Selection Commission sets up Grievances Cells at their headquarters and in their regional offices in Allahabad, Guwahati, Madras and Raipur; General Krishnaswami Sundarji takes over as the new Chief of the Army Staff.

2. Faziabad District and Sessions Judge orders opening of Ram Janam Bhoomi for unhindered worship; Goa connected to Air India's international network when its Airbus, Q 300-B4 arrived from Kuwait at Dabolim airport.

3. Prof. M. G. K. Menon appointed Scientific Adviser to the Prime Minister; Norway Prince Herald and Princess Sonja visit New Delhi, Pope meets Mother Teresa at 'Nirmal Hriday', the Home for the Dying Destitutes founded by her, 33 years ago at Calcutta.

4. A 7-member Science Advisory Council, headed by Prof. C N R Rao, Director of the Indian Institute of Science, Bangalore is constituted for two

years to advise the Prime Minister.

5. India's Permanent Representative to the United Nations, Mr. Natarajan Krishnan selected to an 18-member panel of experts to a review UN Finances.

8. Two Indians—Fr. Chavara Kuriakose Elias and Sister Alphonsa raised to the 'blessed rank' by Pope John Paul II at a function in Kottayam, Kerala.

11. Karnataka Chief Minister, Ramakrishna Hegde submits resignation in the wake of High Court judgement in the arrack bottling contract case; Dr. Madhuri Shah, Chairman of U.G.C. retires. Prof. Yashpal appointed successor.

16. Ramakrishna Hegde returns to power as Chief Minister of Karnataka; 'Sarbat Khalsa' called at Anandpur Sahib (Punjab) directed the Shiromani Akal Dal and the Shiromani Gurudwara Prabhandhak Committee to clear the Golden Temple; Acharya Rajneesh leaves Nepal to reach the island of Crete in Greece.

17. Renowned Philosopher, J. Krishna Murty (90) dies at Ojal in California.

19. Ayilam Panchapakesa Venkateshwaran (56) appointed new Foreign Secretary.

24. The Supreme Court rules that Christian women in the former Travancore-Cochin State have right for equal share of paternal property; Mrs. Rukmini Devi Arundel, founder of Kalakshetra, Madras, dies.

25. DMK wins 64 out of 97 posts of Chairman of Minicipal Councils in Tamil Nadu; Former Chief Election Commissioner, R. K. Trivedi appointed Governor of Gujarat.

26. M. M. Jacob (Con.-I) elected Deputy Chairman of Rajyasabha; Mail and Express trains fares up; frieght, season tickets left untouched in surplus railway budget; Union Minister of State for Energy, Arif Mohammed Khan resigns in protest against the Muslim Women (Protection of Rights on Divorce) Bill. Dr. A. P. Mitra takes over as Director-General of Council of Scientific and Industrial Research and Secretary, Department of Science.

28. Central Budget seeking to implement various elements of long-term fiscal policy with Rs. 467 crore levies and Rs. 3650 crore deficit presented to Parliament by Finance Minister, V. P. Singh; 27 dies as train runs over crowd at Tellicherry, Kerala.

March

2. Punjab Chief Minister, Surjit Singh Barnala expands his ministry by inducting five Ministers of State.

4. Supreme Court bans three Kerala students who refused to sing national anthem from appearing for the annual examination.

6. Bombay High Court rules that the MD examination of Bombay University in last October had been manipulated to benefit Maharashtra Chief Minister, Shivaji Rao Patil Nilangekar.

8. G. M. Shah Government dismissed in Jammu and Kashmir. Governor's rule imposed; Maharashtra Chief Minister S. Rao Patil Nilangekar, implicated in mark scandal involving his daughter Chandrakala, resigns; Himachal Pradesh Governor Hokishe Sema resigns to contest in Rajya Sabha poll; L. K. Advani elected President of B.J.P.

9. Kerala wins overall championship at 24th National Inter State Athletics, AGartala.

11. S. B. Chauhan elected Chief Minister of Maharashtra.

12. Congress (I) Minister, M. P. Gangadharan of Kerala resigns following adverse court verdict.

13. Veteran Congress leader and Ex-Governor K. C. Abraham dies in Kerala.

14. Justice Kirpal Commission concludes that Air India Jumbo jet 'Kanishka' crashed into the Atlantic on June 23, 1985 because of a bomb explosion in its forward cargohold; India finally decides to buy 21 Westland Helicopters from Britain.

16. Internationally wanted criminal Charles Sobharaj and 6 other prisoners escape from Tihar Jail, New Delhi.

18. C. Rajeswara Rao (74), unanimously re-elected General Secretary of the Communist Part of India; Atomic Energy Commission reconstituted. Dr. Raja Ramanna continues to be the Chairman.

24. Government of India rejects Union Carbide's offer to pay $350 million as compensation to Bhopal victims.

26. Punjab Chief Minister Barnala escapes extremists' attempt in Anandpur Sahib.

27. Maharashtra Governor resigns in the wake of being censured by the Bombay and Pune Universities for his alleged interference with affairs of the Universities of the State; The Shipping Corporation of India secures a $34.2 million syndicated loan to purchase 12 bulk carriers from South Korea.

April

1. Sidhartha Shankar Ray appointed Governor of Punjab in place of Dr. Shankar Dayal Sharma who is transferred to Maharashtra; Vice-Admiral R. K. S. Gandhi appointed Governor of Himachal Pradesh; Romesh Bhandari, former Foreign Secretary, who joined Cong. (I) appointed Chairman of the party's Foreign Relations Department.

3. Central Government announces excise benefits for small units; A new panel-Justice Venkataramaiah Commission appointed to determine the Hindi speaking areas in Punjab to be given to Haryana in lieu of Chandigarh.

4. Milon Kumar Banerjee, first Additional Solicitor General appointed Solicitor General of India.

7. International criminal Charles Sobhraj and David Hall, his associate, nabbed at Mapusa in Goa.

9. Turkish Premier, Turgut Ozal pays official visit to India. 'University of Health Sciences', the first Medical University in the country, inaugurated in Vijayawada.

12. Baba Amte declares war for peace on completion of the 'Bharat Jodo' (Knit India) movement from Kanyakumari to Kashmir.

14. 46 people killed in stampede at Mahakumbha Mela at Hardwar.

18. Veteran Congress leader Atulya Ghosh, 83, dies in Calcutta.
19. Fourth Pay Commission finalises recommendations that will entail an expenditure of Rs. 2200 crore.
20. Air India's first Airbus A310-300, 'Yamuna' arrives in Bombay.
21. New national education policy unveiled in Parliament.
21. France Albert Rene, the President of Seychelles, arrives for a 6-day visit to India.
24. Finance Minister V. P. Singh announces Excise, Customs relief of Rs. 81.9 crore.

26. New policy advisory committee headed by G. Parthasarathy appointed.
27. Congress (I) expells former Union Minister, Pranab Kumar Mukherjee from party for 6 years and suspends former Chief Minister of UP Sripat Mishra, former Union Minister A. P. Sharma and former Assam Governor Prakash Mehrotra from party.
28. Malayalam Film 'Chidambaram' directed by G. Aravindan wins best feature film award and Shyam Benegal bags the Best Director award for the Hindi film 'Trikal' in the 33rd national film awards for 1985; West German Chancellor Helmut Kohl arrives for a 4-day official visit to India.
29. Overseas airmail rates shoot up following decisions at Hamburg Congress of Universal Postal Union; Five-member Panthic Committee announces formation of 'Khalistan'.

30. Security forces raid Golden Temple to clear the area of extremists and secessionists — holds 150; Chandra Sekhar re-elected President of Janata Party for the tenth year in succession.

May

5. Controversial Muslim Women Bill passed by Lok Sabha amidst stiff resistance by the opposition.
7. The nonagenarian social worker who devoted his life to the cause of lepers, Dr. Shivajirao Patwardhan, 94, dead.
9. Tenzing Norgay, (72) who scaled the Everest first with Edmund Hillary 33 years ago, dies at Darjeeling.
12. Union Cabinet expanded. External Affairs Minister B. R. Bhagat dropped. Buta Singh made Home Minister.
13. Prime Minister Rajiv Gandhi leaves for Lusaka on the first leg of his 5-day tour of 4 African frontline states of Zambia, Zimbabwe, Angola and Tanzania; New York District Federal Court Judge, Mr. John F. Keenan remits Bhopal gas case to India with the condition that Union Carbide should abide by the ruling of the Indian courts.
14. Tamil Nadu Assembly votes to scrap Upper House.
16. Karunakaran shuffles cabinet. Vayalar Ravi resigns after he was stripped of his Home Portfolio; Veteran film maker V. Shantaram, 75, chosen for the Dada Saheb Phalke award.
18. Sikh head-priests order Punjab Chief Minister, Surjit Singh Barnala to dust shoes at any gurudwas for one week as a punishment for the police action in the Golden Temple; India decides to open diplomatic office in Luanda, Angola after Prime Minister Rajiv Gandhi's official visit there; Dr. K. L. Rao, 84, former Union Minister for Irrigation and Power and international authority on Dams, dies.
19. The pro-government Jatiya Party attains absolute majority in Bangladesh Parliamentary elections.

20. T. N. Kaul, former Foreign Secretary, appointed Ambassador to the Soviet Union.

24. Prime Minister sets up a Punjab Advisory Board with former Defence Minister Jagjivan Ram as head; The first ever embassy of SWAPO (South West African People's Organisation) opened in New Delhi by its President Sam Nujoma.

25. R. Balakrishna Pillai, once dropped from Karunakaran Ministry in Kerala because of his controversial statement on 'Punjab model agitation' reinducted.
25. B. V. Karanth, the eminent theatre personality arrested for the murder of a leading artiste of the M. P. Rangamandal.
28. Union government announces further liberalisation of the licensing rules relating to capacity re-endorsement of existing units in 65 industries; Ajoy Mukherjee, 85, former Chief Minister of West Bengal dies in Calcutta.
30. Excise Minister N. Srinivasan of Kerala resigns when Kerala Public Men (Prevention of Corruption) Commission found prima facie case in the allegations against him.
31. Flute exponent T. R. Mahalingam dies at the age of 60; Plot to blow up Air India's New York — Delhi jet foiled.

June

4. Bhajan Lal resigns as Haryana Chief Ministe and Union Transport Minister Bansi Lal chosen t succeed him.
5. Thachadi Prabhakaran and Ramesh Chennithala inducted into the Kerala Cabinet.
6. A tripatriate meeting convened by the Unio Government decides to transfer Chandigarh t Punjab in principle, but the Haryana Governmen will continue to function there for up to five years Jnanpith award winner, Dr. Masti Venkatesha Iyengar, 95, dies in Bangalore.

9. First AIDS death reported from a private hospital in Bombay, the victim being a businessma who received blood transfusion for a bypass hear surgery in 1980.
10. Justice Venkataramiah Commission recom mends that 7000 acres of land be given to Haryan in lieu of Chandigarh and a new commission b appointed to select the area.
11. 100 crore excise and customs relief to industr announced by the Finance Minister, V. P. Singh
12. The Government imposes ban on non-converti ble debentures to check malpractices by specula tion, Ajit Singh, son of the Lok Dal Presiden

Charan Singh, takes over as Lok Dal Secretary; Dr. Amiya Chakravarthy, 86, poet and scholar and former literary secretary to Rabindranath Tagore, dies at Shaniniketan.

14. Prime Minister Rajiv Gandhi launches Clean Ganga Project at Varanasi.

20. The Union Government appoints a commission headed by Justice D. A. Desai to identify 70,000 acres of land to be transferred to Haryana in lieu of Chandigarh. Punjab Cabinet rejects the Commission.

21. Bharatiya Janata Party leader Atal Bihari Vajpayee and seven Congress (I) candidates declared elected unopposed to the Rajya Sabha.

23. Marxist Party ousts Kerala M.L.A. M. V. Raghavan from party.

24. Union Government sanctions maternity leave for unmarried women employees too; Minor portfolio shuffle at Centre.

25. Accord with Mizo National Front, Laldanga to be Chief Minister; Space Scientist Dr. Vasant R. Gawarikar, 53, appointed Secretary, Science & Technology Department.

28. Congress (I) wins 30 seats out of 45 in Rajya Sabha poll.

29. Karnataka Chief Minister Ramakrishna Hegde reconstitutes cabinet, dropping 17.

29. Akali dissidents decide to form new Party.

30. Mizoram accord signed after protracted negotiations spread over six years, aiming at ending insurgency in the Union territory; Fourth Pay Commission recommends substantial increase in pay and allowances to nearly 5.2 million central government employees.

July

2. Andhra Pradesh Government goes back to six-day week; C. G. Somiah, I.A.S. takes over as new Union Home Secretary.

3. The Samyukta Maharashtra Seema Samiti calls off its month-long agitation against the compulsory teaching of Kannada in Marathi Medium Schools in the disputed boundary areas; Union Government increases interest rate on the Employees Provident Fund from 10.15 per cent to 11 per cent.

4. Prime Minister Rajiv Gandhi pays official visit to Mauritius.

5. Akali Dal split becomes formal when the break-away group elected Mr. Prakash Singh Badal as its President and 'expelled' Mr. Surjit Singh Barnala from the party.

6. Jagjivan Ram, 78, passes away.

7. Congress (I) Working Committee appoints Mr. Harbans Singh Bhalla, one of the party General Secretaries, as Working President of the party, following the demise of its President, Jagjivan Ram

9. Communal violence in Ahmedabad following the traditional chariot procession of Lord Jagdish, Subhadra and Balbhadra — about 20 killed; Union Petroleum Minister, Chandrasekhar Singh, 60, dies

12. Gujarati writer Pannalal Patel wins the Jnanpeeth Award for 1985.

13. Communal riots spread in Gujarat, toll rises to fortyfive.

15. Bangladesh President Lt. Gen. H. M. Ershad pays official visit to India.

15. India protests against China's intrusion of six to seven k.m. into the Indian territory in Arunachal Pradesh.

18. Former Karnataka Chief Minister, R. Gundu Rao expelled from Congress Party for six years for anti-party activities.

18. U.P. Chief Minister orders enquiry into the reported loss of eyesight of nearly 300 people following operations conducted by a Jaipur-based doctor in eye-camps in Khurja and Moradabad towns in April; Government bans use of aspirin to children below 12 years of age.

19. In Punjab, 'Khalistan capital' stormed and arms and ammunitions destroyed.

20. India withdraws from Edinborough Commonwealth Games.

21. The Supreme Court orders all-India test for medical seats; B. G. Deshmukh selected to being Cabinet Secretary.

23. The seventh round of the Sino-Indian border talks concludes without resolving the issue; Pratap Kishan Kaul, Cabinet Secretary appointed India's Ambassador to the U.S.

25. Terrorists gun down 15 bus passengers at Muktsar in Punjab.

26. Army called out to quell mass rioting in Delhi.

27. Army called out in Kalimpong, Darjeeling district as the Gorkha National Liberation Front sponsored agitation for 'Gorkhaland' took a violent turn, 9 die.

29. Government announces further customs and excise relief for a number of items including food-stuffs and fertilisers and also restored pre-budget exemptions in the case of certain others.

30. Acharya Rajneesh returns to India from Portugal, disillusioned about the outside world

31. No trust motion against Kerala Government defeated

August

1. Amnesty scheme for evaders of indirect taxes announced.

3. Prime Minister, Rajiv Gandhi arrives in London for 3-day mini Commonwealth Summit.

4. Bhaskar Ghosh I.A.S., appointed Director General of Doordharshan in place of Harish Khanna, who retired

5. Prof. Nurul Hassan appointed Governor of W. Bengal in place of Uma Shankar Dixit; Lok Sabha passes constitution 53rd Amendment bill conferring statehood to Mizoram

6. Government admits that China has built a helipad on the Indian side of the Mc Mahon line, About 100 people killed when the Amritsar –Tata Express collided with a goods train near Garhwa station in the Dhanbad Division in Bihar; The first wholly Indian test-tube baby born to 23-year old Mrs. Shyamji Chawda, at the KEM hospital,

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10. Gen. A. S. Vaidya who was Chief of Army Staff at the time of 'Operation Blue Star' shot dead at Pune.

12. Singing National Anthem is not obligatory—rules Supreme Court in the 'Jehova's Witnesses' case; Kathmandu selected to locate the Secretariat of the SAARC; Tarsem Singh Kohar, the prime accused in Muktsar bus killings arrested in Punjab; The Lok Sabha passes Constitution 54th Amendment bill seeking to increase the salaries of the Chief Justices and Judges of the Supreme Court and High Courts.

13. Parliament approves the government resolution to invoke Article 249 of the Constitution and empower Parliament to legislate on certain State matters to deal with terrorism along the border areas.

17. Rain-swollen Godavari causes havoc in Andhra Pradesh. More than 100 killed. Prime Minister announces Rs. 30 crore aid.

20. A restructured 20-point programme announced

21. Nine-member Cong.-MNF coalition ministry headed by the MNF President Laldenga sworn in Aizawl; Andhra flood toll nears 175; Government drops plan for Security Belt.

22. The Supreme Court directs the petition moved by the Attorney General, K. Parasaran, challenging the verdict that no person can be forced to sing the national anthem, to the Full Bench; Former Karnataka Chief Minister R. Gundu Rao launches new party — Indian National Congress (Indira Gandhi); Sobha Singh, the renowned Punjabi Painter dies.

25. Congress (J) merges with Congress (I); Prime Minister Rajiv Gandhi pledges to donate his eyes to the National Eye Bank.

26. Sunderlal Bahuguna, V. B. Salunke and Mrs. Vasantibehen get Jamnalal Bajaj award; Finance Minister V. P. Singh announces more customs and excise duty relief.

27. The Central Government curbs the use of aspirin and formulations containing salicylates by children below 12.

28. President Zail Singh lays the foundation stone for the Lakshmibai National College of Physical Education at Trivandrum.

September

1. LIC announces three new schems and cuts premium on its 30th anniversary celebrations; AIADMK retains both Tirunelveli and Aruppukkottai seats in Tamil Nadu Assembly by-elections; Jalandhar Additional District & Sessions Judge R. P. Gaind shot dead by Terrorists.

3. Tamil Nadu Chief Minister M. G. Ramachandran leaves for the US for medical check up; Dr. Verghese Kurien wins 1986 Carnegie Peace Prize; India protests to UK visa restrictions

5. National Awards for 186 school teachers on the eve of 25th Anniversary of Teachers Day; Union Government files compensation case against Union Carbide Corporation of America in Bhopal Court.

6. Union Government agrees to implement new pay-scales from January 1, 1986; President's rule imposed in J&K for 6 months.

8. Dr. Madhuri Shah wins 1986 Nehru Literacy Award.

9. Nicaraguan President Daniel Ortega arrives on a three-day visit in New Delhi; CBI claims to have arrested the assassin of former Chief of Army, Gen. A. S. Vaidya who was killed in Pune.

10. The dissident Akali leaders, Mr. Prakash Singh Badal and Mr. G. S. Tohra released from Tihar jail; Prime Minister Rajiv Gandhi receives Nicaragua's highest award, the Augusto Caesar Sandino Order from its President Daniel Ortega at New Delhi.

12. Kerala Chief Minister K. Karunakaran declares that the State would not have a nuclear power station that may create problems; UPSC Under Secretary Rati Pal Saroj arrested on charges of manipulating results of competitive examination.

15. India signs agreement with the Soviet Union to launch her fourth Satellite—1000 kg. remote sensing satellite IRS-IA from the Baikanoer Cosmodrome in mid-September, 1987.

19. Ratan Tata and Rahul Bajaj appointed Chairmen of Air India and Indian Airlines boards respectively; Prof. M. G. K. Menon, Scientific Adviser to Prime Minister; member, Planning Commission has been elected President of International Council of Scientific Unions.

21. R. K. P. Shankar Das, a senior Advocate of the Supreme Court, elected President of the International Bar Association; Mani Madhava Chakyar gets Tulasi Award of Rs. 1 lakh, instituted by Govt. of Madhya Pradesh.

25. Terrorists gun down CPI leader Darshan Singh Candian in Punjab; Singapore imposes Visa restrictions on Indians; United States orders withdrawal of 25 members of the Soviet Mission in the United States.

28. The Vice-President R. Venkataraman leaves for Botswana to attend the Frontline State's 20th Independence Day celebration

29. Pilot averts major accident to Airbus in Madras—195 escapes.

30. P. T. Usha, India's sprint queen, wins first gold for India in Seoul Asiad.

October

1. Swami Ranganathananda of Ramakrishna Mission chosen for the Indira Gandhi Award for National Integration

2. Rajiv Gandhi escapes attempt on life at Rajghat ceremony

3. The Director General of Punjab Police, J. R. Ribeiro escapes terrorist attack

4. Mrs. Neerja Mishra, Chief Airhostess of the Pan Am Jetliner hijacked at Karachi, is awarded Ashok Chakra, the country's highest honour for bravery, posthumously.

5. Helicopter Corporation of India inaugurated by Prime Minister at Bombay

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6. King Hussain of Jordan arrives in Delhi on official visit. MGR takes over the post of AIADMK General Secretary; M. S. Swaminathan, Director-General of IRRI, Manila, gets the 1986 Albert Einstein World Award of Science for outstanding scientific contribution and life-long dedication to Science.

7. Ten crore relief in Excise and Customs duties announced.

9. Kerala Government announces Rs. 3 lakh and car for P. T. Usha.

13. Prime Minister Rajiv Gandhi leaves for Jakarta on a four-nations tour of Indonesia, Australia, Newzealand and Thailand.

16. P. C. Sethi suspended from the primary membership of the Congress Party.

18. T. Anjiah, 57, former Chief Minister of Andhra Pradesh, dies.

20. Korambayil Ahmed Haji (IUML) becomes Deputy Speaker of Kerala Assembly.

21. Tamil Nadu Cabinet reshuffled. 10 Ministers including Veerappan and Hande dropped.

22. Union Cabinet reshuffled, Arjun Singh becomes Communication Minister. Arun Nehru out.

24. Foundation laid for 'Seabird', South Asia's biggest naval-base at Karwar in Karnataka.

25. Terrorists massacre in Kuban Village market in Punjab.

28. Seven persons including Police Chief Bhinder's uncle shot dead in Punjab.

29. Hokishe Sema, M.P. recalled to Nagaland to become Chief Minister when S. C. Jamir resigned; The SAARC conference on South Asian Children at New Delhi calls for a covenant on children.

30. President Zail Singh arrives in Belgrade in the first leg of a 12-day three-nations tour. Prime Minister Rajiv Gandhi announces that no sick industry will be taken over by the government in future.

31. Tamil Nadu Legislative Council abolished.

November

3. Waryam Singh Khapianwali, the man behind Muktsar massacre killed in Punjab.

7. Railway luggage and parcel rates hiked by 15 per cent to yield an additional revenue of Rs. 320 crore. Dr. Farooq Abdulla takes over as Chief Minister of J&K coalition government of National Conference and Congress (I). Assembly dissolved on CM's advice.

8. Police sweep on Sri Lanka militants in Tamil Nadu; large cache of sophisticated arms seized; 'Apna Utsav', the country's first national cultural festival opens in New Delhi.

12. Kamalapathi Tripathi resigns from the post of Working President of Congress (I).

13. Government announces R. S. Pathak, judge of the Supreme Court as the next Chief Justice of India.

18. Mrs. Pratibha Patel elected Dy. Chairman of Rajya Sabha.

19. Parliament approves bill to tighten citizenship laws to present clandestine influx of foreigners.

21. Kerala High Court declares the reinduction of Mr. R. Balakrishna Pillai into the State Cabinet unconstitutional.

22. The Union Government claims Rs. 3,900 crore from the Union Carbide Corporation as damages in Bhopal District Court.

23. Punjab wins 11th National Sports Championship for women at Chandigarh.

24. Seven DMK MLAs disqualified from membership by the Speaker on the ground that they have violated the oath by burning copies of the Constitution; Soviet leader Gorbachev arrives in New Delhi on a four-day official visit.

The ruling Janata Party in Karnataka and the CPM-led Front in Tripura makes a clean sweep in the by-elections to their State Assemblies. Bansilal, Gharpade and Manorama Singh wins Lok Sabha seats.

27. Dhanbad Judge sentence 188 former Central Industrial Security Force personnel for life imprisonment for their revolt in 1979; Rajiv and Gorbachev call for nuclear arms ban in a joint declaration.

28. Telecom., Postal rates hiked.

29. Sharad Pawar group of Congress (S) decides to join Congress (I).

30. In Punjab, Gurucharan Singh Tohra elected SGPC Chief, candidate of Chief Minister Barnala defeated.

December

1. Punjab terrorists kill 24 bus passengers at Khudda Village in Hoshiarpur District; The eighth World Congress of International Economic Association opens in New Delhi. Prof. Amartya Sen (India), Drummond Professor of Political Economy at the Oxford University, elected President.

3. The Delhi High Court confirms the death sentence imposed on Indira assassins, Satwant Singh, Balbir Singh and Kehar Singh.

4. Former Assam Chief Minister, Hiteshwar Saikia appointed Lt. Governor of Mizoram

5. Envelope to cost 60 paise in the second postal rate hike in a fortnight; The Vice-Chancellor of Cochin Varsity, Dr. K. Gopalan resigns in protest against the new restrictive legislation for the University

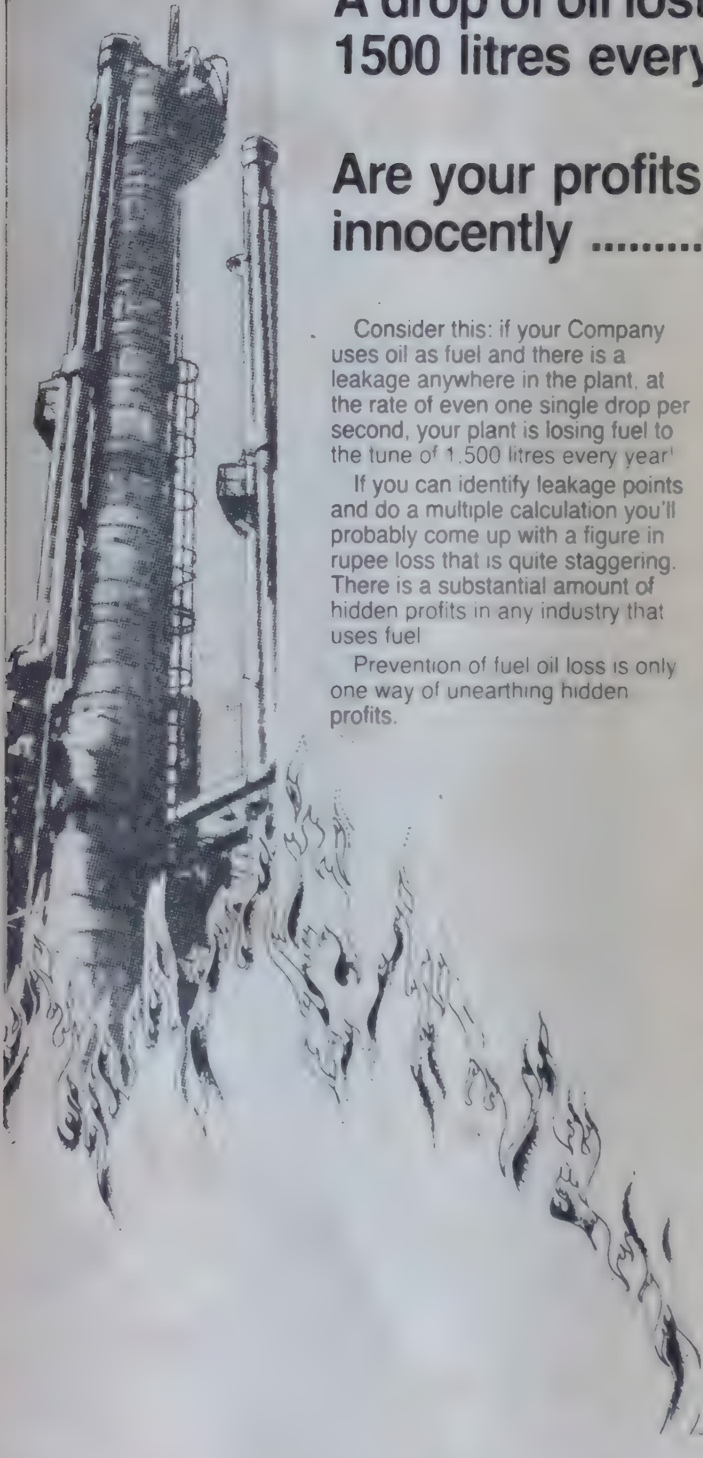
8. Lok Sabha passes Constitution 55th Amendment Bill conferring full statehood to Arunachal Pradesh; The Congress (S) which broke away from the Congress (I) about 8 years ago, reunited with the party in Aurangabad Session, MGR announces formation of a Medical University in Tamil Nadu.

9. Nearly 20 persons killed in Bangalore and adjoining areas in three-day violence sparked by the publication of a story by a local daily

10. Parliament passes the Consumer Protection Bill and seven other related bills

12. Delhi rejects China's protest on Arunachal being conferred full statehood

13. The Vice President R. Venkataraman inaugurates the 400th anniversary celebrations of



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Narayaneeyam by Melpathur Narayana Bhattathiri at Guruvayur.
14. Film actress Smitha Patil (39) dies of brain hemorrhage.
15. No-trust move against Barnala fails to take off in Punjab.

International Events

January

1. Sri Lanka Government restores civic rights of the former Prime Minister, Mrs. Sirimavo Bandaranaike after more than five years; Pro-government politicians in Bangladesh form a new party called 'Jatiya Party'.
7. U.S. imposes economic sanctions against Libya in retaliation to Libya's support for terrorists.
9. British Defence Minister, Michael Heseltine resigns over the future of 'Westland'.
14 Coup attempt and fighting reported from Aden, capital of South Yemen.
17 U S Solar system probe 'Voyager 2' discovers six new moons of the planet Uranus, making the total to 12; Pakistan formally adopts Muslim League as to country's ruling party
19. Britain and France decide to build a twin rail tunnel across the channel at a cost of $2.3 billion.
20 Martin Luther King, the black leader assassinated in 1969, honoured with a federal holiday on his birthday. Lesotho's Prime Minister, Leabua Jonathan's Government toppled by Commander of 3000 strong Paramilitary Force, Maj. Gen. Justin Lekhawye Ivan Lendl beats Borris Becker to clinch the $5 lakh Nabisco Masters Tennis.
23 America's Voyager-2 Space craft finds two more tiny moons of planet Saturn, bringing the total to 15
25 South Yemen Socialist Party strips the President Ali Nasser Mohammed of all posts and proclaims P.M., Haider Abubaker Al-Attas as Interim Head of State.
29. American Space Shuttle, Challenger explodes after 75 seconds of its launching from Cape Canavaral, all the seven on board including the School leader Sharon Christa McAuliffe killed; Former Defence Minister and Commander of the rebel National Resistance Army Yoweri Musevini takes over as President of Uganda. Samson Kisekka named Prime Minister.

February

2. The Nobel Peace Prize winner, Alva Myrdal (84) dies in Stockholm Oman bans marriage to foreigners USSR retains Nehru Gold Cup Football Championship defeating China 1 0 at Trivandrum
3 Oscar Arias (45) London trained economist becomes the youngest Chief Executive of Costa Rica when he sweeped Presidential elections. Mother Teresa's Missionaries of Charity opens its first convent in North America in San Francisco. Women voted for the first time in Lichenstein to help return a conservative coalition to power
7 Philippines goes to poll to elect new President. Embattled President for life Jean Claude Duvalier (34), flees Haiti. Military dominated 6 man Ruling Council led by Gen. Henri Namphy takes over.
8. Australia wins the Benson and Hedges one day cricket by defeating India.
9. Pope John Paul II and the Arch Bishop of Cantabury, Dr. Robert Runcie meet at the Arch Bishop's House, Bombay; Former Prime Minister, Haider Abubaker Al-Attas, 47 named the new President of South Yemen.
11. Anatoly Shcharansky, the Soviet human rights activist, is freed during a East-West prisoner swap at Berlin.
16. Dr. Mario Soares, elected first Civilian President of Portugal in 60 years; Soviet Union rehabiliates nobel prize-winning novelist, Boris Pasternak.
17. U.S. refuses political assylum to ousted Haitian leader, Jean-Claude Duvalier; Singapore Prime Minister, Lee Kuan Yew appoints his son Brigadier Gen. Lee Hsien Loong (34), Minister of Trade and Industry.
20. Soviet Union launches Mir (Peace), new Space Station, more advanced than the 1982 Salyut-7.
23. Chris Lloyd wins the $1.8 million International Players Tennis Championship.
25. In Philippines, Mrs. Corazon Aquino, 53, sworn in as President. Ferdinand Marcos flees into exile.
28. Swedish Prime Minister, Olof Palme, 59, shot dead.

March

2. Twenty three pro-Marcos Generals sacked in Philippines; Queen Elizabeth II gives formal assent to the Australia Act abolishing all remaining legislative, judicial and executive links of the country with Britain; Deputy Prime Minister Ingvar Carlson takes over as care-taker Prime Minister in Sweden; India clinches Hockey Series with Pakistan (3-2).
6. Mikhail Gorbachev re-elected General Secretary of the Soviet Communist Party for five years.
8. South Africa lifts seven-month old state of emergency enforced in parts of the country rocked by anti-apartheid violence; Jadallah Abu al-Talhi named new Secretary (Prime Minister) by the Libyan General People's Congress.
9. The Zimbabwe opposition leader, Joshua Nkomo announces rapprochment with his long time foe, Prime Minister, Robert Mugabe in merging their Parties.
10. Shuttle Challenger's crew compartment with the remains of the seven astronauts inside found in the Atlantic ocean.
11. U.S. rejects six world leaders' plea for halting nuclear tests.
12. Ingvar Carlson, Social Democrat Deputy Prime Minister, elected Prime Minister of Sweden.
13. Corazon Government in Philippines freezes Marcos's assets; Soviet Space vehicle, Soyuz-T 15

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reaches space with two cosmonauts on board—Leonid Kizim and Vladimir Solvyov.

13 Ecuador declares emergency after rebel General Frank Vargas Pazzos seizes the military air-base; Spaniards vote in favour of remaining in NATO.

14. Europe's Giotto space probe runs into a wall of dust and damages its Camera as it reached an estimated 523 km past the nucleus of Halley's Commet; A UN probe concludes that "on many occasions" Iraq used chemical weapons against Iranian forces; The Soviet Space craft Soyuz T-15 with two cosmonauts on board docks with the orbiting Space Station 'Mir'.

16. Swiss voters in a national referendem, overwhelmingly reject their country's entry into the United Nations.

17. In French national elections, the right wing wins a wafer-thin majority and the Socialist Party emerges as the largest single party.

20 3-year old cabinet of Nepal headed by Prime Minister Lokendra Bahadur Chand resigns in preparation for polls. Nagendra Prasad Rijlal sworn in interim Prime Minister. Prince Andrew, fourth in the line of succession to the British trone is engaged to miss Sarah Ferguson, a commoner Gaulist leader Jacques Chirac named French Prime Minister

22 President Ershad and opposition parties in Bangladesh agrees to hold parliamentary elections on May 7. Gen Henri Namphy dissolves the six-member junta that rules Haiti since the ouster of Jean-Claude Duvalier, and declares himself the head of a new government.

23 Kenya's John Gugi wins the World Cross country championship at Switzerland, Zola Bud retains the women's title.

24 Martina beats Hana to win the Women's Tennis Championship at New York in 4 sets an unusual happening in the Womens Tennis in 85 years

25 US Libya locked in battle off Sidra Gulf US Sixth Fleet knocks out Libyan missile launch bases and sinks two of their gun boats Out of Africa directed by Sydney Pollack wins seven Oscars at the 58th Academy Awards William Hurt adjudged best actor and Geraldine Page as best actress.

26. Libya threatens to extend its 'holy war' against the U.S beyond the Gulf of Sidra by striking at American military bases across the Mediterranean Corazon Aquino of Philipines abolishes 190 member National Assembly under an interim constitution. Swiz Government freezes all assets belonging to Marcos family.

29. The world's first "test tube" quintuplets, all boys, were born in London to a teacher.

April

2 Union Carbide Corporation levied record fine of $1 38 million (about Rs 1 7 crore) for 221 safety violations at the multi national's chemical plant at the Institute in West Virginia, USA.

5 Barber Conable (63), nominee of United States, elected President of World Bank in place of retiring A. W. Clausen.

7. French Novelist, Margyuri Dureu wins Rs. 6 lakh Hemingway Award. The award winning novel is 'The Lover', translated into 20 lanugages; Europe adjusts currency rates, Franc devalued by 58 per cent against the Deutsche Mark.

9. USSR retains the Kings Cup Amateur Boxing, India's Jaipal Singh wins the gold in the Super Heavyweight section.

10. Anti-Zia cries rent air as Benazir Bhutto, acting President of Pakistan People's Party gets rousing welcome on her return from abroad.

13. The U.S. Sixth Fleet reaches within striking range of Libya awaiting commands.

14. The Heads of Government of India, Argentina, Mexico, Greece, Tanzania & Sweden — constituting the six-nations for continental peace initiative—call for another American-Soviet summit.

15. U.S. bombs Tripoli, the capital of Libya; Foreign Ministers of Non-Aligned countries condemn American attack and calls for immediate a halt to further US military operation.

15. Switzerland freezes assets of deposed President of Haiti, Jean-Claude Duvalier.

16. Shooting breaks out in Tripoli; UN and NAM condemn US attack on Libya. Libya destroys telecommunication installations in the Italian island of Lampedusa in retaliation, Argentina decides to shift the capital to centrally placed Rio Negro from Buenos Aires.

17. Gaddafi's house in shambles; he appeared on Libyan TV; Three western hostages in Lebanon executed in retaliation.

18. U.S. evacuates Khartoom Embassy amidst fears of retaliation for air strikes against Libya, Uruguay grants one year residence permit to Acharya Rajneesh, Canan Banana re-elected President of Zimbabwe, Pakistan grabs a sensational last ball victory over India in the final of the inaugural Australasia Cup; 3 Californian journalists who exposed corruption in the Philippines get 'Pulitzer' prize in the 70th year of awards.

19. Marcel Dessault, 94, the genius of aircraft designing who built some of the world's most sophisticated warplanes dies in Paris

21 NAM delegates meet Ghaddafi at Tripoli and expresses solidarity with him against US bombing Australian World Champion Robde Castella becomes the third fastest marathoner in history by winning the 90th Boston Marathon

22. US, Britain and France join in vetoing a non-aligned resolution in the security council condemning US air attack on Libya.

22. The new Central Committee of the Socialist Unity Party of East Germany re-elects Mr. Eric Honekar as its General Secretary; European Community nations decide sweeping sanctions agains Libya.

23. Libya expels 250 foreign journalists for mea sures taken by the EEC. Botha Government aban dons enforcement of Pass laws which for decade

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restricted the presence of blacks in white areas.
25 The Dutchess of Windsor, for whom Britain's King Edward VIII abdicated in 1936, dies in Paris at 89
26 18-year old Mswati III became world's youngest ruler when he was coronated King of Swaziland at a ceremony in Mbabane
29 Moscow reports nuclear leak in Chernobyl Power Station, Emperor Hirohito of Japan completes 60 years of rule
29 The Norwegian Prime Minister, Kaare Willoch's coalition Government collapses after losing vote of confidence

May

2 Ann Bancroff 30, of the US becomes first woman to reach N. Pole.
4. The Afgan leader Babrak Karnal, resigns, Security Chief Najibullah replaces him.
4 Norway gets a woman Prime Minister, Gro Harlaus Bruntland, 47; Zeshan Ali (India) becomes the Asian Junior Tennis Champion defeating Chung Tze Ming (Taiwan) at Jakarta.
6. Argentine Economist, Dr Raul Prebish dies at 85; Leaders of seven major industrial nations end a three-day summit at Tokyo by pledging new efforts to quell turbulent currency markets, Branko Mikulia new Premier of Yugoslavia.
7. Violence mars Bungladesh general elections to choose a 300 member Parliament; Sadiq el-Mehdi, 50, of the Umma Party sworn in as Sudan's new Prime Minister
11. Nepal's 9 million voters go to polls to elect a new national assembly
12 Norway's Labour Government, only four days old, devalues its currency Crown because of big fall in the price of oil.
14 Britain's House of Commons passes a package deal providing for a new 'British National Overseas' status for Hong Kong's British Dependent Territory citizens numbering 2.5 million
15 Sinan Hasani and Lazar Mojsoyv took over as President and Vice President respectively of Yugoslavia's collective Presidency
16 Leopoldo Galtieri, President when Argentina invaded the Falklands islands, sentenced to 12 years in prison by the armed forces supreme council
19 South Africa raid on ANC bases in the Frontline states of Zambia, Zimbabwe and Botswana
19 Sri Lankan security forces launches major offences in Jaffna, 90 killed
19 Benazir Bhutto elected co chairman of Pakistan People's Party
25 Up to 600 people feared dead when a double decker ferry capsized in the Meghna river in Southern Bangladesh, Sudanese runner Oman Kha lifa leads thousands of runners in New York in the culmination of world-wide sportaid run, Tamil militants launch reprisal raid in Trincomalee Sinha la settlement, killing 30, Pouring out for famine victims in the 'race against time' across the country culminated in New Delhi.
26. Liberal Party candiate Virgilio Bareo Vargas, 64, elected President of Colombia
27 The Opposition candidate Joaquis Balaquer becomes the President of the Dominican Republic for the fourth time
29. The Opposition Democratic Labour Party led by Mr. Errol Barrow scores landslide victory in the general elections in Barbados.
30. India win the hockey test series against Malaysia (4-0)
31. Forty nine developing countries sign accord to launch the first round of negotiations on the exchange of trade concessions within the Global System of Trade Preferences (GSTP); An European Ariane-2 rocket carrying a telecommunication satellite blown up in mid-flight by controllers after its third stage failed to ignite.

June

2. Saudi Arabia devalues its currency by 2.7 per cent, the revised value of the Saudi Riyal being 3.75 dollars instead of 3.65 dollars.
4. The death toll of Chernobyl nuclear disaster rises to 25.
8. Ramesh Krishnan wins the men's grass court tennis title at Beckham beating Danie Visser (S. Africa).
9. Kurt Waldheim elected President of Austria, amidst controversy that he was an "unrepentant Nazi", Israel recalls envoy in Vienna. Austria's Socialist Chancellor Fred Sinowatz resigns in the wake of conservative win in Presidential elections, The Rogers commission finds that the destruction of Challenger and the death of its seven crew members had a single cause—the failure of a seal in the shuttle's booster rocket.
12. South Africa declares nation-wide state of emergency just before the 10th anniversary of the 1976 Soweto uprising; The Commonwealth Eminent Persons Group concludes that a negotiated settlement in S. Africa is impossible
13 Poland, Eastern Europe's most debt-ridden country rejoins international Monetary Fund as its 151st member, Marich Man Singh Shrestha, former Speaker of the Nepalese National Panchayat elected unopposed as the Sixth Prime Minister of Nepal
15 The blind Argentine Writer, Jorge Luis Borges, 86, dies in Geneva, The Head of the Chernobyl nuclear power plant sacked over the April 26th accident, that spread atomic radiation over Europe, India finishes 3rd behind Thailand and Singapore in the International dragon boat race at Singapore
17 Blacks launch nation wide general strike to commemerate the 10th anniversary of riots in Soweto that galvanised the anti apartheid struggle
17 The U S Chief Justice, Warren Burger, resigns Associate Justice William Rehnquist named successor
18 The Bulgarian Communist Party leader Todo Zhivkov 75, relected President of the Bulgaria

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Council of State. Former Premier, George Atansasov, 53, reelected Chairman of the Council of Ministers.

20. Peruvian troops kill more than 300 guerillas imprisoned in two Lima jails when they rose in revolt; Acharya Rajnish leaves Uruguay to land in Jamaica.

23. Prime Minister Felippe Gonzales's Socialist Party retains absolute majority in Spanish general elections.

25. Poland, a Charter member, readmitted to World Bank.

26. The US Congress ends three years of resistance to military aid for Nicaraguan rebels and votes its approval for a $100 million aid package; Nigerian Oil Minister, Rilwanu Lukman, elected Chairman of OPEC.

27. World Court denounces the US backing for Contra rebels trying to topple the leftist Government in Nicaragua.

29. Argentina wins the 13th World Cup soccer defeating West Germany (3-2) at Mexico City.

July

2. Zimbabwe announces that it intends to abolish 20 reserved seats for whites in the 100-seat Parliament, 'Sports Aid' nets $20 million for Africa's aid.

3. Gen. Wojciech Jaruzelski re-elected first Secretary of the Polish Communist Party.

5. China devalues the renminbi (Yuan) by a record 15.8 per cent against major foreign currencies; The Statue of Liberty was officially re-opened to the public by the U.S. First Lady, Mrs. Nancy Reagan, Martina beats Hana to clinch her 7th Wimbledon title and the 5th in succession.

6 Marcos loyalists seize hotel, proclaim 'Government', Boris Becker retains his Wimbledon crown beating top seeded Ivan Lendl.

7. Manila rebels led by Arturo Tolentino surrenders, Ruling Liberal Democratic Party led by Prime Minister Yasuhiro Nakasone, secures biggest landslide victory in post war Japan's Parliamentary elections.

8. India wins Rubber in test series in England (2-0).

9 Jordan expells PLO-Fattah leader Abu Jihad and orders winding up of offices of Arafat faction in the country, Tunisian President, Habib Bourguiba, 83, chooses a new heir Economy and Finance Minister Rachid Sfar, 52, appointed Prime Minister and Secretary-General of the ruling Destourian Socialist Party.

10. Vietnamese Communist Party leader, Le Duan, 78, dies in Hanoi.

12 Kuwait gets a new cabinet headed by the Crown Prince and Prime Minister, Sheik Saad al-Abdullah al-Salem al-Sabah.

14 The Vietnamese Communist Party elects President Truong Chinh, 80, as its leader succeeding Le Duan who died.

15 Ian Martin, 39 of Britain appointed Secretary General of Amnesty International, India's Sandya Agarwal hits the highest test score (190) ever by a batswoman in the 3rd Women's Cricket Test at Woster against England.

18. Mario do Graca Machungo appointed Prime Minister of Mozambique.

21. USA beats USSR (87-85) to win the World Cup Basketball at Madrid.

24. Coup bid foiled in Equatorial Guinea. Dy. Prime Minister, Fructuoso Mba Onana arrested; Socialist Prime Minister, Felipe Gonzalez, 44, takes oath in Spain for a second four-year team.

25. Director Vincente Minnelli, 83, whose movies 'An American in Paris', 'Gigi' and 'Lust for Life' garnered 16 Academy awards, dies in Los Angeles.

27. King Hassan II of Morocco resigns as Chairman of the 21-member Arab League as a consequence of adverse Arab reaction to his effort to mend fences with Israel.

29. Prime Minister Prem Tinsulanonda's 4-party coalition wins general elections in Thailand.

August

1. Bettino Craxi forms Italy's 49th post-war Government.

3. U.S. President authorises to sell subsidised wheat to Soviet Union; Malaysia wins the 30th Merdeka Cup Football defeating Czechoslovakia (3-0); India bows to Czech in the semifinals.

4. The National Front coalition government of Prime Minister Dr. Mahathir Mohammed returns to power in Malaysia.

5. Barring Britain, Commonwealth Mini Summit in London adopts new sanctions against South Africa.

6. South Africa clamps counter sanctions on Frontline states.

8. The six nation summit of India, Sweden, Mexico, Tanzania, Argentina and Greece at Ixtapa, Mexico urges nuclear sanity in the international system.

10. Dr. Joaquin Balaguer sworn in as the 64th President of the Dominican Republic.

12. The U.S. snaps defence ties with New Zealand as a consequence of the latter's refusal to allow nuclear-armed and nuclear-powered US ships entry in their waters.

14. Pakistan government cracks down on dissidents; Opposition Leader Miss Benazir Bhuto jailed for 30 days; 155 Sri Lankan refugees from W Germany admitted to Canada when they arrive in boats on the shores of New Foundland

17. Sudan rebels shoot down plane, 60 killed; Olympic Champions USA bags the World Women's Basketball title beating USSR (108-88)

20. India's D. V. Prasad and Jayasree Khadilkar win the Commonwealth Chess Championship

21. Ian Botham breaks the world test wicket taking record during the 3rd Test against Newzealand at the Oval. He moves past Lillie's record of 355 by dismissing Bruce Edgar and Jelf Croue

25. Volcanic gas leak kills 1200 in north-west of Cameroon. Holland retains the World Women's hockety title by defeating Olympic champs West

ജീവൻടോൺ

ഒരിക്കൽ കിട്ടിക്കഴിഞ്ഞ തൂക്കവും, തടിയും ജീവൻടോൺ നിർത്തിയെന്നു കരുതി വീണ്ടും കുറയുന്നതല്ല

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Germany (3-0).

27 21 blacks killed in clashes with police at Soweto, South Africa.

28 West Germany imposes stringent Visa restrictions to curb the flow of asylum seekers from third world countries.

29 Bhagyasree Sathe becomes the first Indian woman to bag the chess grandmaster title.

September

1. Eighth Summit of Non Aligned Movement begins in Harare, Zimbabwe. Dr. Robert Mugabe takes over the Chairmanship from Prime Minister, Rajiv Gandhi; Seventyseven die in mid-air plane collission in Los Angeles.

2. Nearly 700 people aboard a Soviet liner reported missing after it collided with a Freighter in the Black Sea and sank.

4. Mother Teresa announces decision to open charity houses in Cuba, South Africa and China.

5. Four Arabic gunmen seize Panam jetliner at Karachi and holds 400 passengers as hostages.

6. Pakistan commandos storm Panam jetliner seized by gunmen at Karachi and 20 people killed in the shoot out. Rajiv Gandhi elected Chairman of Africa Fund meant mainly to assist the Frontline states fighting Pretoria regime.

8. Cyprus named venue of NAM Foreign Ministers conference in 1988. Miss Benazir Bhutto released after a 3-week detention; Chilean President Augusto Pinochet survives bid on life. Archbishop Desmond Tutu enthroned as leader of the 2-million-strong Anglican Church in Southern Africa.

9. Amnesty International accuses the Sri Lankan Government of atrocities against the minority Tamil population Japan makes political history when a woman Mrs. Takako Doi, 57. was elected Chairman of the Japanese Socialist Party—Japan's number-one Opposition.

12 Moscow agrees to free US newsmen. Nicholas Daniloff of the 'US News and World Report', who was arrested on espionage charges. Indonesia devalues Rupiah by 31.2% against the dollar and other major currencies.

14 On the eve of the 10th Asiad. bomb explosion kills 5 at Kimpo International airport in Seoul, China retains the World Women's Volleyball championship beating Cuba.

16. France clamps Visa curbs to counter terrorism—all foreigners except the nationals of the EC countries and Switzerland will need visas to enter the country.

17. Gold mine blaze claims 170 lives in South Africa.

19. President Hammer de Roburt of the tiny South Pacific nation of Nauru resigns losing office in a Parliamentary gamble.

19 Japan announces new measures against South Africa.

20 10th Asiad opens in Seoul. GATT conference at Punta Del Este, Uruguay conceds India's demand that negotiation in services like banking and travel be conducted outside the GATT forum; The 35-nation European Security Conference in Stockholm approves document that will allow the East and West to monitor continuously and inspect all troop movements from the Atlantic to the Urals in the Soviet Union; Ravi Shastri completes 2000 test runs.

22. First Test between India and Australia ends up in a 'tie' at Madras. Score: Australia 574-7 declared and 170-5 declared; India 397 and 347.

26. Nigerian currency Naira devalued by 66%.

29. American Journalist Nicholas Daniloff, charged of espionage, leaves Moscow; Moroccan Prime Minister Mohammed Karis Lamrani resigns on health reasons; King Hassan names the Education Minister, Azeddine Laraki as the new PM.

30. Vengsarkar completes 5000 runs in test cricket when he hit 15 in the 2nd innings against Australia at New Delhi.

October

2. Noted Hungarian born economist, Kora Nocholas Kaldor, 78, dies in the University city of Cambridge.

3. The U.S. Senate overrides President Reagan's veto on sanctions against South Africa.

5. Garry Kasparov retains his World Chess Championship defeating Anatoly Karpov (12-11).

6. A virgin peak in the Soviet Central Caucasus named after Somantha Smith, the little American 'envoy of peace'.

7. India wins the Charminar challenge cup one day cricket series against Australia (3-2).

10. Argentine President Raul Alfonsin awarded the Council of Europe's human rights prize; The Israeli Prime Minister, Mr. Shimon Peres, submits resignation to pave way for the Foreign Minister, Itzak Shemir to succeed him.

11. Reagan and Gorbachev meet in Reykjavik, capital of Iceland for their second summit.

12. 1800 die in El Salvador quake; Mother Teresa narrowly escapes from a plane crash in Tanzania; Javier Perez de Cuellar re-elected Secretary General of United Nations for 5 years with effect from January 1987.

13. SDI blocks superpower deal at Reykjavik summit of Reagan and Gorbachev; Mr. Stanley Cohen of the US and Italo-American, Ms. Rita Levi-Montalcini, Sweden's Karolinska Institute get 1986 Nobel Prize for medicine.

14. Surviver of Nazi camp, Mr. Elie Wiesel wins Nobel Peace Prize; Bngladesh goes to polls to elect a Civilian President.

15. The Soviet Union starts pulling out its troops from Afghanistan; Three share Nobel Prize for Physics. Chemistry Prize also for three; Taiwan's ruling Kuomintong (KMT) announce end of 37 years of martial law to pave way for new political parties to be set up. Martina registers her 1000th win in international tennis when she defeated Natalie Tanzlat of France.

16. Lt. Gen. H. M. Ershad, 56, voted 10th President of Bangladesh but the third to be elected directly

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Sunil Gavaskar hits his 33rd test century (103) at mbay in the 3rd test against Australia.

Australia beats England (2-1) and claims the 6th orld Cup Hockey at London; India finishes 12th d last

The Mozambique President, Mr. Samora achel dies in plane crash.

3. Former Central African 'Emperor Jean-Bedel kassa' arrested in Bangui on his return from exile.

The Belgian Hernio Nelisten and Firmin Thierie in the 7th Himalayan Car Rally.

3. US President Ronald Reagan signs executive rder implementing economic sanction ordered by e US Congress against S. Africa.

0. Ahmed Zaki Yamani relieved from the post of audi Oil Minister. He is replaced by Planning inister, Hisham Nazes.

1. Indo-Chinese revolutionary Prince Souphaouvong steps down as President of Laos.

ovember

2. Ramesh Krishnan became the first Asian to win he Hongkong Seiko Super Tennis Tournament.

3. The US appoints Edward Perkins as the first lack Ambassador to South Africa; Mr. Joaquin Chissano, Foreign Minister, elected President of Mozambique, to succeed Samora Machel.

4. Democrats wrests control of the US Senate from he Republicans in the biennial elections.

5. 'Washington Post' reports that Pakistan detonated a nuclear-device, between September 18 and 21, the second of a series conducted by them in 1986.

8. Vyacheslav Molotov, 96, Soviet Premier for 11 years until he stepped down in 1941 for Joseph Stalin, dies in Moscow.

10. President Ershad withdraws Bangladesh's 4-5 year of military rule.

13. The West German Parliament adopts measures to limit the number of foreigners to be given assylum.

15 USA wins the team title in the World Senior Powerlifting Championship at Prague (Netherlands). India's P. J. Joseph wins a silver in the 56 kg category

17 SAARC Summit at Bangalore decides to set up permanent secretariat at Kathmandu; India elected new Chairman.

17. Leading French Industrialist, George Besse, Chairman of the State-owned Renault Car Company, is shot dead by terrorists in Paris.

19. The Soviet Parliament adops legislation that allows private enterprise on a small scale.

23. In Philippines, President Corazon Aquino removes her potent rival Juan Ponie Enrile from the post of Defence Minister.

24. Martina wins the $ one-million Women's Tennis at Madison Square Garden.

25. President Reagan declares that a profit of about $10 million to $30 million made from a shipment of arms to Iran had been illegally siphoned off to finance the guerilla war of the 'Contras' in Nicaragua; Regan fires National Security Advisor John Poindexter; France confirms it has perfected a neutron bomb that kills humans but does not destory property; Police foils assasination attempt on Pope John Paul II in Brisbane, Australia.

26. King Fahd of Saudi Arab and Amir of Bahrain, Sheikh Isa Bin Sulman Al Khalifa jointly open the 20 km long Saudi—Bahrain causeway.

27. Philippines President, Corazon Aquino wins another round when her government signed a ceasefire agreement with the communist insurgents towards ending a 17-year old guerilla war.

28. A B-52 bomber carrying 12 nuclear-tipped cruise missiles enters service with the US Airforce, raising the total of cruise-carrying bombers and multiple-warhead missiles above the ceiling of 1320 set out in the 1979 SALT-2 agreement;

29. Noted Holywood star Cary Grant, 82, dies.

December

2. UAE decides to levy fee on private schools.

4. Hongkong Governor Sir Edward Younde, 62, dies in Beijing; Australia bans imports from South Africa.

5. U.S. Congress decides to conduct Watergate style probe into the Iran arms deal.

12. 69 killed in a Soviet TU-134 airliner crash at Schoenefeld airport in E. Berlin.

14. The Liberation Tigers of Tamil Eelam in Sri Lanka announces 'elimination' of 20 members of the rival Eelam People's Revolutionary Liberation Front; Two Kurds held for the murder of Swedish Prime Minister Olof Palme.

15. UK deports 'Jammu Kashmir Liberation Front' Chairman Amanullah Khan; An experimental aircraft Voyager takes off from Edwards Air Force Base, California on an unprecedented attempt to circle the earth without stopping or refuelling; The opposition National Alliance for Reconstruction wins a landslide Election victory in Trinad and Tobago ending a 30-year rule by People's National Movement; Karachi rocked by clashes between rival Muslim communities, more than 150 killed

17. Top leaders quit in Vietnam to pave way for youngsters.

WHO IS WHO IN INDIA

Presidents of India

Dr. Rajendra Prasad	1950-1962
Dr. Sarvepalli Radhakrishnan	1962-1967
Dr. Zakir Husain	1967-1969

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ustice Mohammed Hidayatullah : 1969-1969 (Acting)
arahagiri Venkata Giri : 1969-1974
akhruddin Ali Ahmed : 1974-1977
. D. Jatti : 1977-1977 (Acting)
eelam Sanjiva Reddy : 1977-1982
iani Zail Singh : 1982-Till date

Vice-Presidents of India

Dr. Sarvepalli Radhakrishnan : 1952-1962
Dr. Zakir Husain : 1962-1967
Varahagiri Venkata Giri : 1967-1969
Gopal Swarup Pathak : 1969-1974
B. D. Jatti : 1974-1979
Mohammed Hidayatullah : 1979-1984
R. Venkataraman : 1984-Till date

Prime Ministers of India

Jawaharlal Nehru : 1947-1964
Gulzari Lal Nanda : 1964-1964 (Acting)
Lal Bahadur Shastri : 1964-1966
Gulzari Lal Nanda : 1966-1966 (Acting)
Indira Gandhi : 1966-1977
Morarji Desai : 1977-1979
Charan Singh : 1979-1980
Indira Gandhi : 1980-1984
Rajiv Gandhi : 1984-Till date

Chief Justices of India

Harilal J. Kania : 1950-1951
M. Patanjali Sastri : 1951-1954
Mehar Chand Mahajan : 1954-1954
B. K. Mukherjea : 1954-1956
S. R. Das : 1956-1959
Bhuvaneshwar Prasad Sinha : 1959-1964
P. B. Gajendragadkar : 1964-1966
A. K. Sarkar : 1966-1966
K. Subba Rao : 1966-1967
K. N. Wanchoo : 1967-1968
M. Hidayatullah : 1968-1970
J. C. Shah : 1970-1971
S. M. Sikri : 1971-1973
A. N. Ray : 1973-1977
M. H. Beg : 1977-1978
Y. V. Chandrachud : 1978-1985
P. N. Bhagwati : 1985-1986
R. S. Pathak : 1986-Till date

Chief Election Commissioners of India

Sukumar Sen	1950-1958
K. V. K. Sundaram	1958-1967
S. P. Sen Verma	1967-1972
Dr. Nagendra Singh	1972-1973
T. Swaminathan	1973-1977
S. L. Shakdhar	1977-1982
R. K. Trivedi	1982-1985
R. V. S. Peri Sastri	1985-Till date

Chiefs of Army Staff

General Maharaj Rajendra Sinhji	1955-1955
General S. M. Srinagesh	1955-1957

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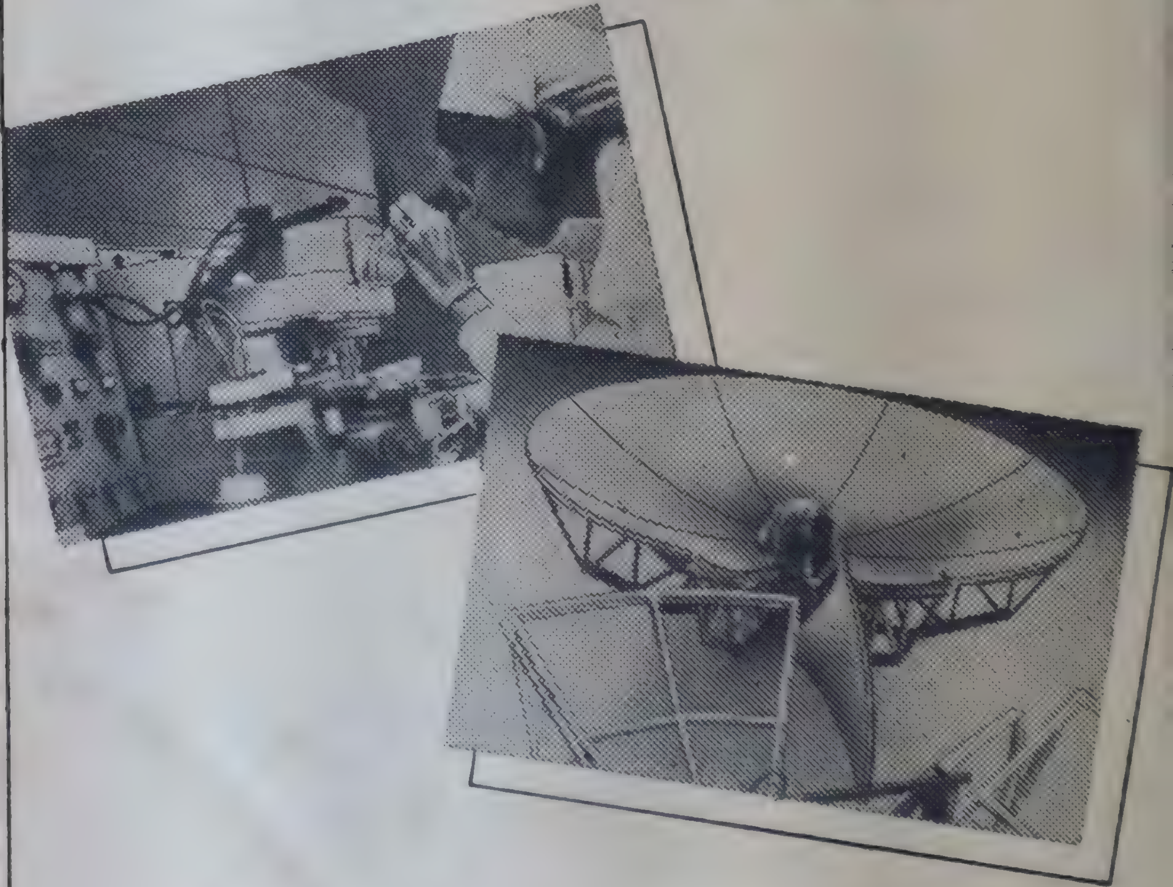

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eneral P. N. Thapar : 1961-1962
eneral J. N. Chaudhuri : 1962-1966
eneral P. K. Kumaramangalam : 1966-1969
eneral S. H. F. J. Manekshaw : 1969-1972
ield Marshal S. H. F. J. Manekshaw : 1973-1973
eneral G. G. Bewoor : 1973-1975
eneral T. N. Raina : 1975-1978
eneral O. P. Malhotra : 1978-1981
eneral K. V. Krishna Rao : 1981-1983
eneral A. S. Vaidya : 1983-1986
eneral K. Sundarjee : 1986-Till date

(General Sir Roy Bucher (1948-49), General K. M. Kariappa (1949-53) and General Maharaj ajendra Sinhji (1953-55) served as commanders-in-chief of Indian Army. General Kariappa was onferred the rank of Field Marshal last year).

hiefs of Naval Staff

ice-Admiral R. D. Katari : 1958-1962
ice-Admiral B. S. Soman : 1962-1966
dmiral A. K. Chatterjee : 1966-1970
dmiral S. M. Nanda : 1970-1973
dmiral S. N. Kohli : 1973-1976
dmiral J. L. Cursetji : 1976-1979
dmiral R. L. Pereira : 1979-1982
dmiral O. S. Dawson : 1982-1984
dmiral R. H. Tahiliani : 1984-Till date

Chiefs of Air Staff

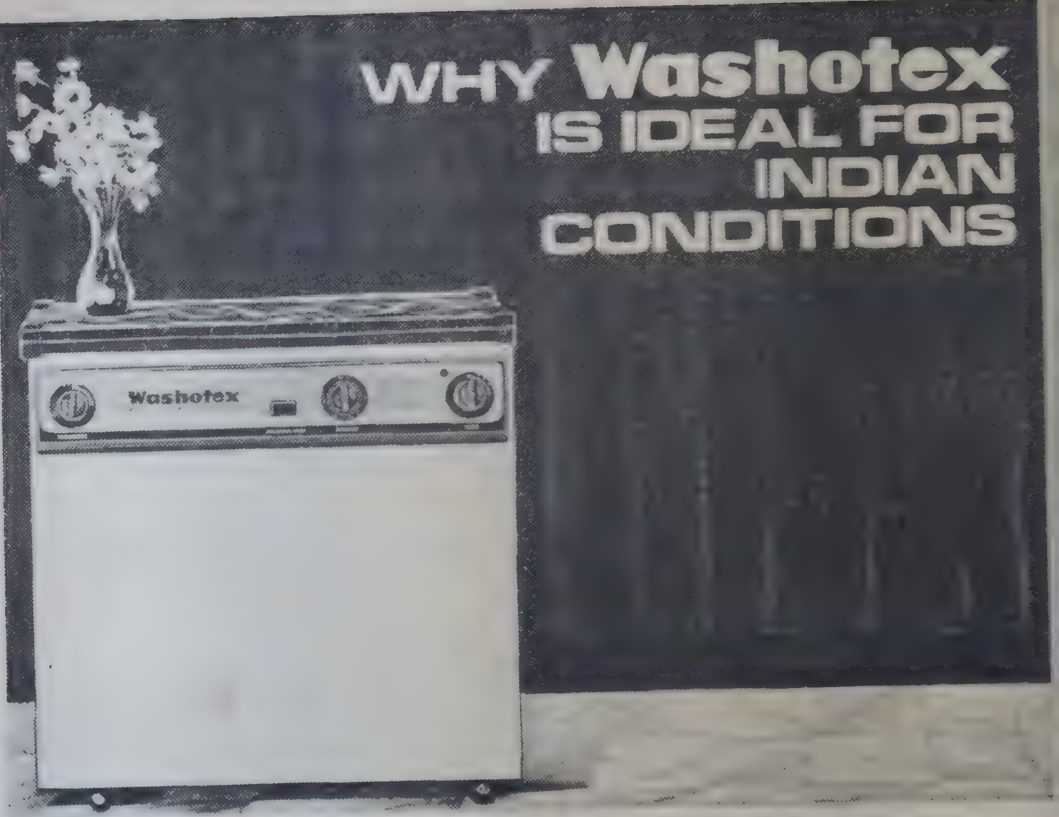
Air Marshal Sir Thomas Elmhirst : 1947-1950
Air Marshal Sir Ronald Lvelaw Chapnam : 1950-1951
Air Marshal Sir Gerald Gibbs : 1951-1954
Air Marshal S. Mukherjee : 1954-1960
Air Marshal A. M. Engineer : 1960-1964
Air Chief Marshal Arjan Singh : 1964-1969
Air Chief Marshal P. C. Lal : 1969-1973
Air Chief Marshal O. P. Mehra : 1973-1976
Air Chief Marshal H. Moolgavkar : 1976-1978
Air Chief Marshal I. H. Latif : 1978-1981
Air Chief Marshal Dilbagh Singh : 1981-1984
Air Chief Marshal L. M. Katre : 1984-1985
Air Chief Marshal D. A. La Fontaine : 1985-Till date

Union Government

President: Giani Zail Singh
Vice-President: R. Venkataraman
Prime Minister: Rajiv Gandhi

Cabinet Ministers

1. **Rajiv Gandhi**: Prime Minister and all other Ministries and departments not allotted
2. **P. V. Narasimha Rao**: Human Resource Development and Health and Family Welfare
3. **V. P. Singh**: Finance
4. **Buta Singh**: Home Affairs
5. **P. Shiv Shankar**: Commerce
6. **N. D. Tiwari**: External Affairs
7. **J. Vengala Rao**: Industry
8. **G. S. Dhilon**: Agriculture and Rural Development
9. **Arjun Singh**: Communications
10. **Bhajan Lal**: Environment and Forests
11. **A. B. A Ghani Khan Choudhury**: Programme Implementation
12. **Mohsina Kidwai**: Urban Development
13. **Asoke Sen**: Law and Justice



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2. Low voltage and frequent power shutdown will not affect the functioning of the machine.	Computerised programmer will not work satisfactorily in these conditions.
3. Washes, rinses and dries your garments within 6 to 8 minutes becasue washer and dryer work simultaneously with 2 separate motors – Reversible, slow speed bigger impeller washes quicker.	Tumble type washing takes longer time – nearly 60 minutes for one cycle of operation for same quantity of clothes.
4. Washes and dries 3 Kg of single heavy clothes like handloom double bed sheets, curtains, etc.	Not recommended in Tumble wash since the machine may jump or even 'walk' due to excessive vibration.
5. Simple in design – less investment – less maintenance cost – less current consumption since there is no heater – servicing is no problem.	Sophisticated mechanism costs you more – servicing can be attended by only specialised personnel.

Washotex is lighter – movable on castors – no permanent installation required – stainless steel interior and rust-proof aluminium bod – efficient high speed spinner for drying.

EXELADS/SG 315/8

14. **B. Shankaranand**: Water Resources
15. **H. K. L. Bhagat**: Parliamentary Affairs, Food and Civil Supplies
16. **K. C. Pant**: Steel and Mines
17. **Mufti Mohammad Syed**: Tourism
18. **Vasant Sathe**: Energy

Ministers of State with Independent charge

19. **P. A. Sangma**: Labour
20. **Rajendra Kumari Bajpai**: Welfare
21. **R. N. Mirdha**: Textiles
22. **Ajit Panja**: Information and Broadcasting
23. **Madhavrao Scindia**: Railways
24. **Jagdish Tytler**: Civil Aviation
25. **Rajesh Pilot**: Surface Transport
26. **Braham Dutt**: Petroleum and Natural Gas

Ministers of State

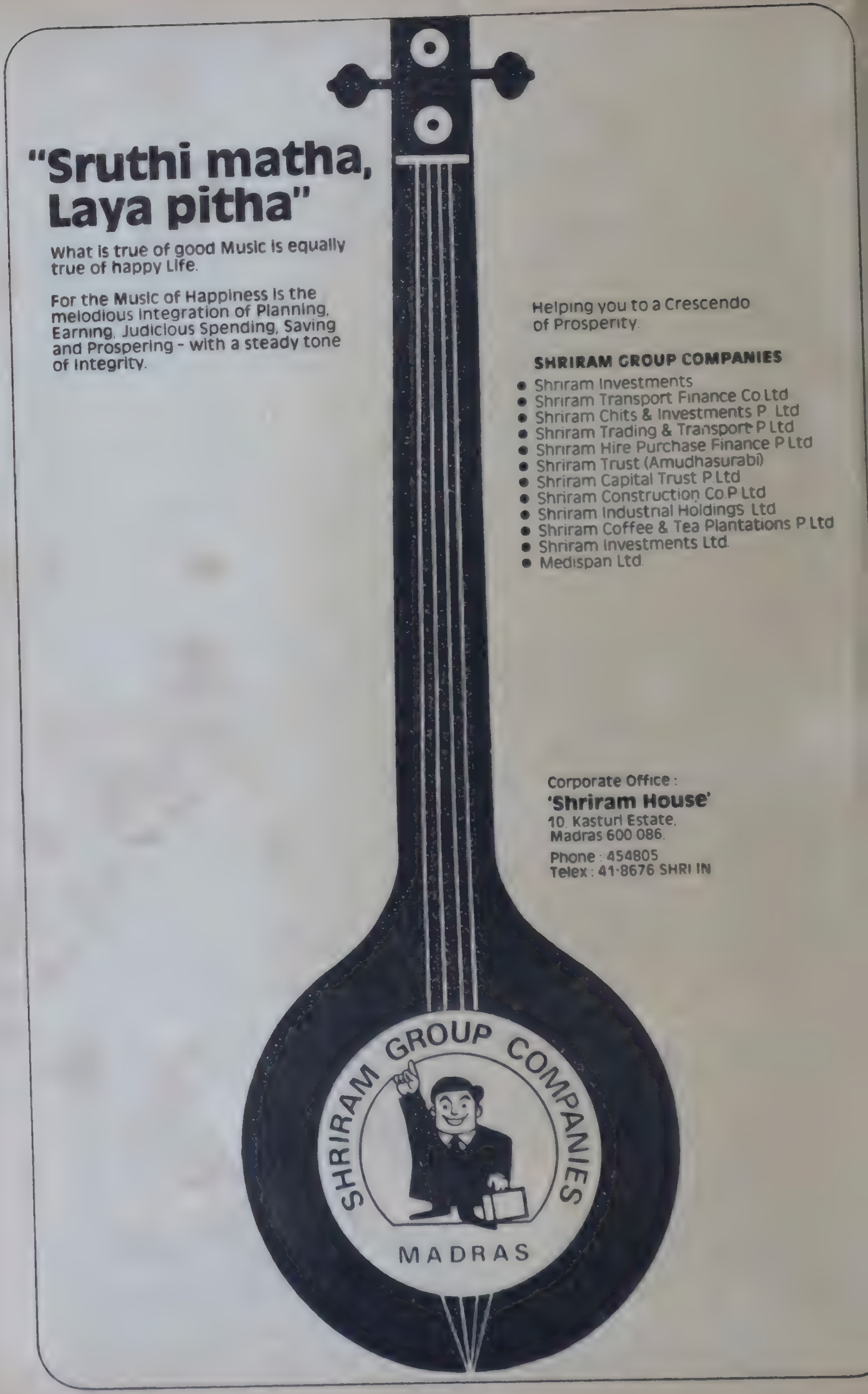
27. **Arun Singh**: Defence Research and Development
28. **B. K. Gadhvi**: Department of Expenditure
29. **Dalbir Singh**: Urban Development
30. **Eduardo Faleiro**: External Affairs
31. **M. R. Bhardwaj**: Law and Justice
32. **P. Chidambaram**: Personnel, Public Grievances, Pensions and Home Affairs
33. **Ghulam Nabi Azad**: Food and Civil Supplies
34. **K. R. Narayanan**: Science and Technology
35. **Natwar Singh**: External Affairs
36. **Shivraj Patil**: Defence Production
37. **Sukh Ram**: Planning
38. **Chintamani Panigrahi**: Home
39. **P. R. Das Munshi**: Commerce
40. **R. Prabhu**: Fertilisers in the Ministry of Agriculture
41. **M. M. Jacob**: Parliamentary Affairs
42. **Santosh Mohan Dev**: Communications
43. **Janardhan Poojari**: Finance
44. **K. K. Tewari**: Public Enterprises
45. **Krishna Sahi**: Education and Culture
46. **Margaret Alva**: Youth Affairs, Sports and Child Development
47. **Ramanand Yadav**: Rural Development
48. **Jaichandra Singh**: Chemicals and Petro Chemicals
49. **M. Arunachalam**: Industrial Development
50. **Ramdulari Sinha**: Mines
51. **Saroj Khaparde**: Health, Family Welfare
52. **Shiela Dikshit**: Parliamentary Affairs
53. **Sushila Rohatgi**: Power
54. **Yogendra Makwana**: Agriculture and Co-opeation
55. **Z. R. Ansari**: Environment and Forest

Deputy Ministers

56. **Biren Singh Engti**: Personnel and Training
57. **Giridhar Gomango**: Welfare
58. **S. Krishna Kumar**: Textiles

Heads of Important Offices

Speaker, Lok Sabha	: Balram Jakhar
Dy. Speaker, Lok Sabha	: Thampi Durai
Chairman, Rajya Sabha	: R. Venkataraman
Dy. Chairman, Rajya Sabha	: Mrs. Pratibha Devisingh Patil
Chairman, Planning Commission	: Rajiv Gandhi
Dy. Chairman, Planning Commission	: Dr. Manmohan Singh
Chairman, Law Commission	: Justice Desai
Chairman, Monopolies and Restrictive Trade Practices Commission (MRTP)	: S. Madhusudan Rao
Chairman, Atomic Energy Commission	: Raja Ramanna



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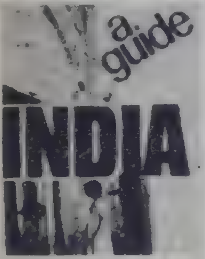

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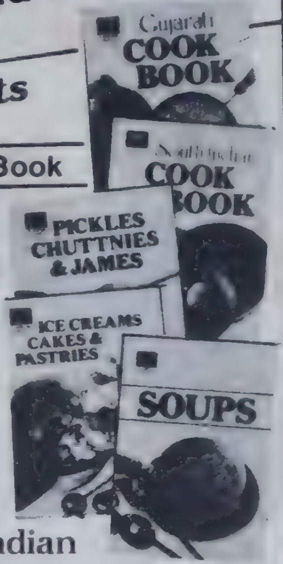

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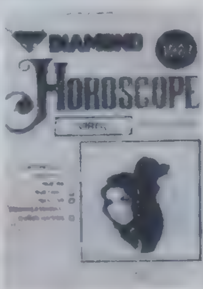

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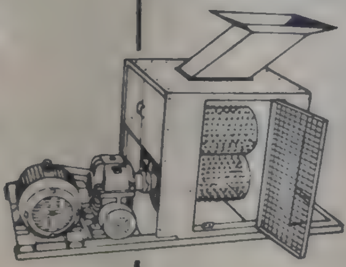

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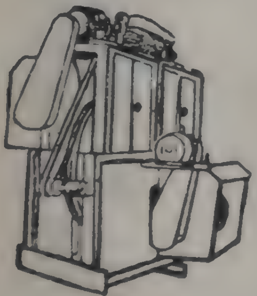

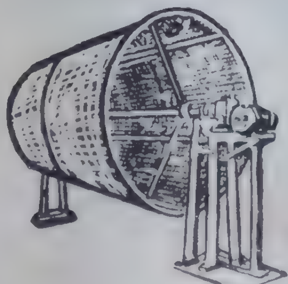

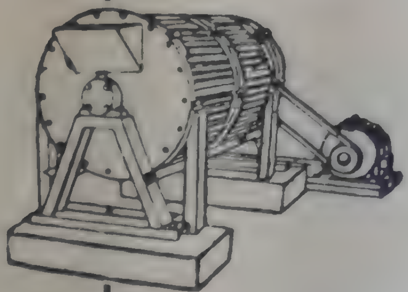

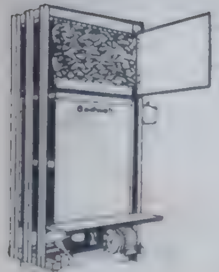

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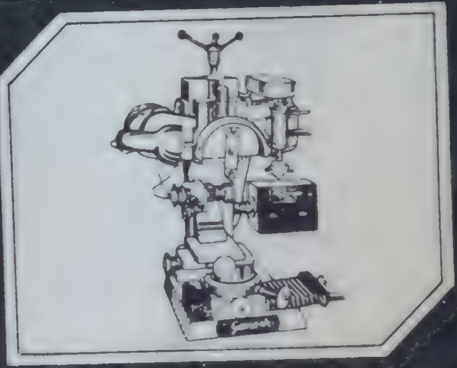

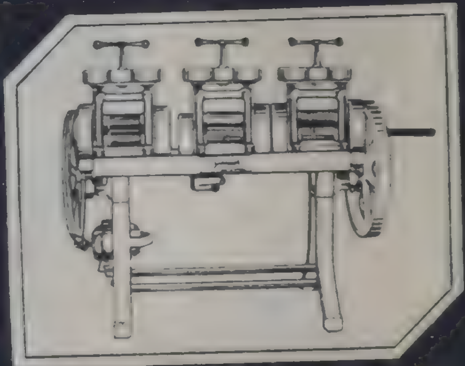

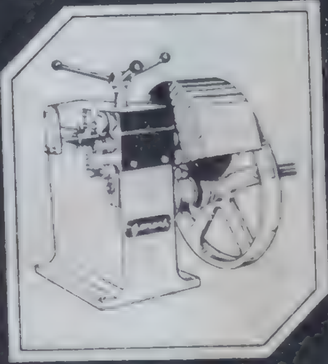

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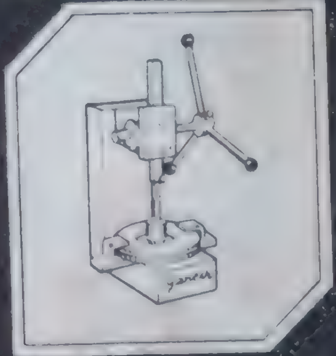

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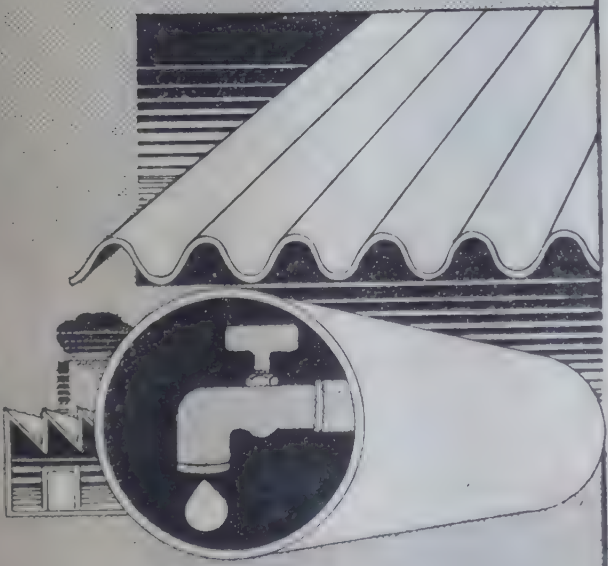

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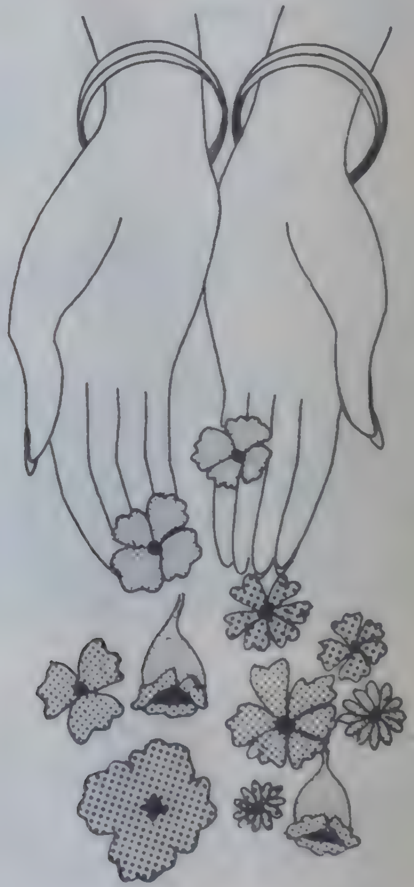

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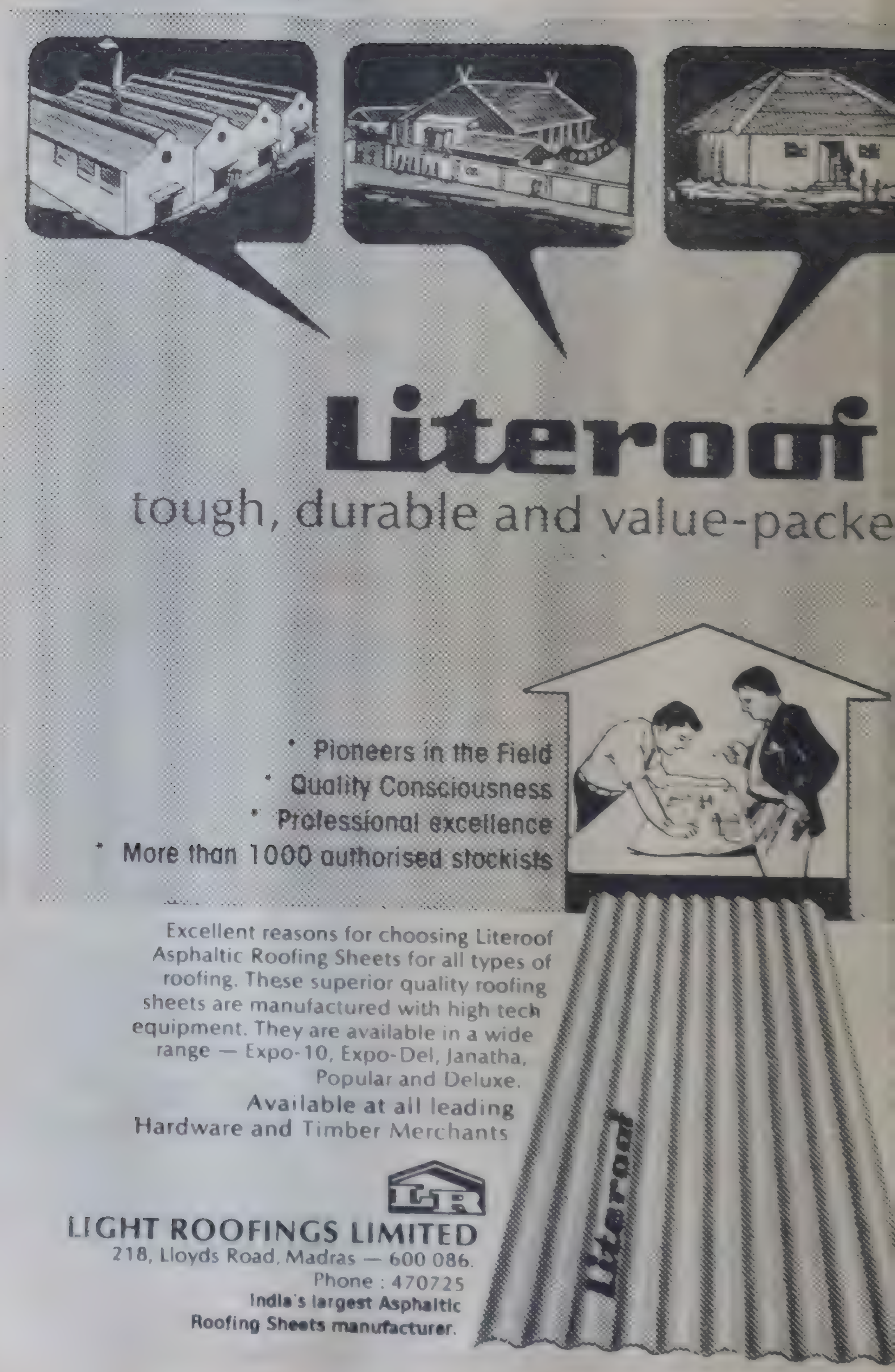

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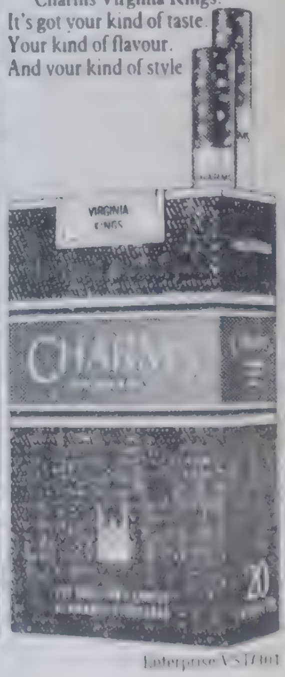

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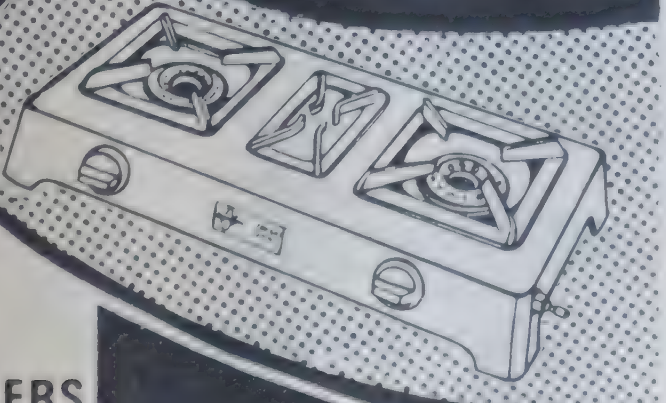

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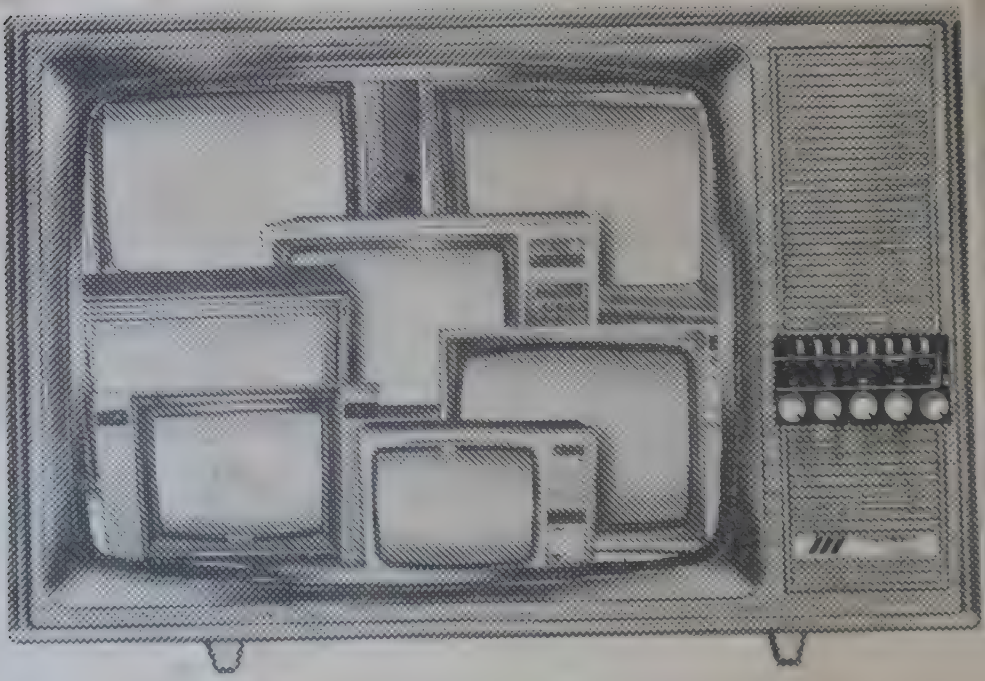

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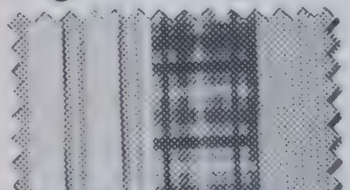

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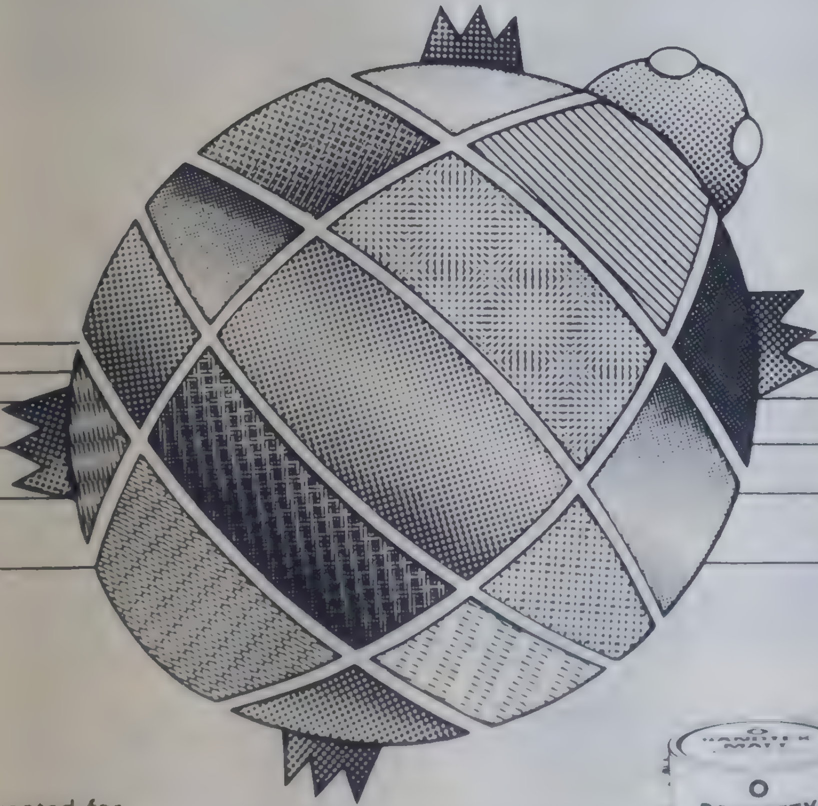

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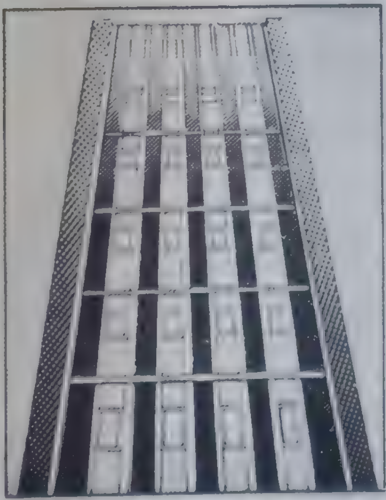

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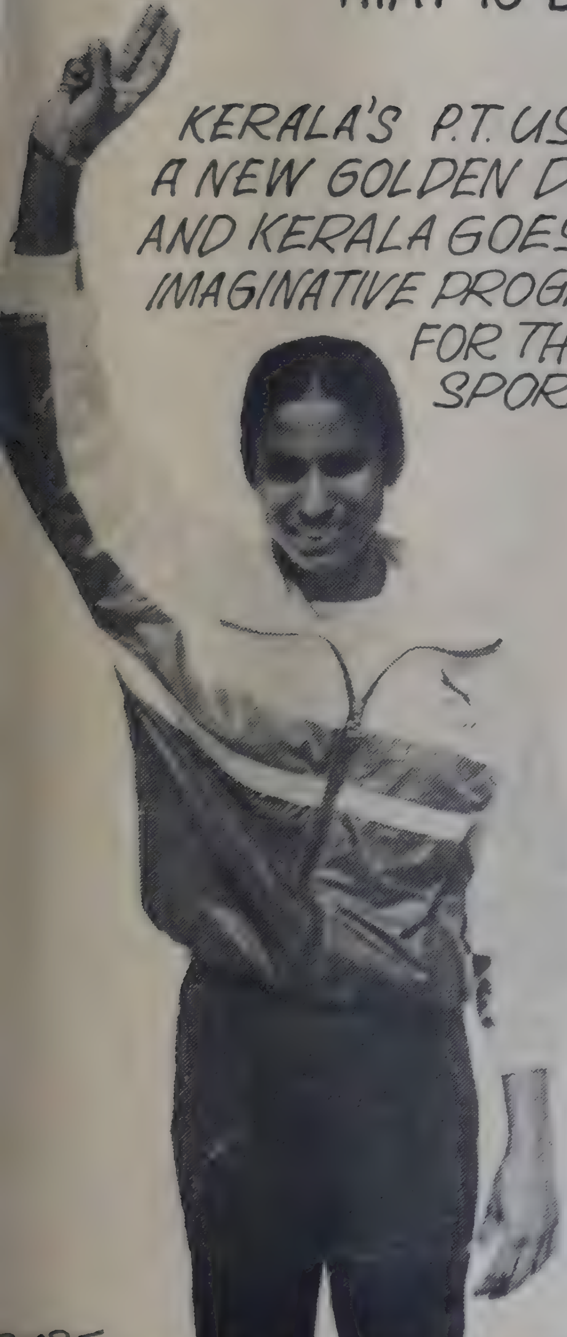
A NEW DAWN

USHA MEANS USHUS
THAT IS DAWN



KERALA'S P.T. USHA RIGHTLY MEANS A NEW GOLDEN DAWN IN INDIAN SPORTS AND KERALA GOES AHEAD WITH SEVERAL IMAGINATIVE PROGRAMMES FOR THE DEVELOPMENT OF SPORTS

- A NEW DIRECTORATE FOR SPORTS AND YOUTH WELFARE
- THE SOUTHERN REGIONAL CENTRE OF LEKSHMI BAI NATIONAL COLLEGE OF PHYSICAL EDUCATION IN TRIVANDRUM
- INCENTIVES, AWARDS, AND COACHING FACILITIES FOR SPORTSMEN

PUBLIC RELATIONS
DEPARTMENT, GOVT. OF
KERALA

This is HOECHST in India!

Hoechst began operations in India in 1956 and has since emerged as a responsible corporate structure whose four pillars are its result oriented professionalism, its pursuit of excellence, its obsession with research, its high quality products. These, indeed, are the major objectives which Hoechst holds as its commitment to the country and its people.

Hoechst is pledged to follow Government policies. It proposes to invest, diversify and expand its operations to meet the needs of India. Hoechst believes that today's record is but tomorrow's standard. And tomorrow will be more challenging and surprising still. Specially, because Hoechst India Limited is already standing today at the gateway to tomorrow.

Some outstanding features of Hoechst India Limited

Basic Drugs

Hoechst manufactures Basic Drugs of outstanding therapeutic value such as furosemide (Lasix), antidiabetics (Daonil and Rastinon), a plasma volume expander (Haemaccel), to name a few

Pharmaceuticals

Hoechst formulates and markets an assortment of research based, efficacious, ethical medicines which are established brand leaders.

Veterinary Products

Hoechst manufactures and markets a range of effective Veterinary specialities including the popular Foot and Mouth Disease Vaccine. A new addition is Panacur, the well known anthelmintic.

Agrochemicals

Hoechst formulates and markets a group of versatile, highly successful Agrochemicals like Thiodan (Endosulfan), Arelon (Isoproturon) and Decis (Pyrethroid). After-sales service and technical education and advice to users are among the best in the country.

Diagnostics

The future of medicine is diagnostic treatment. In this new area Hoechst and Behring market a wide range of Diagnostics which saves cost of treatment and lives through earlier detection and correct diagnosis.

Industrial Division

Hoechst markets chemical raw materials, intermediates, dyes/pigments, synthetic fibres, silicones and a host of other industrial products produced by Hoechst AG Germany and its associated companies to various sectors ranging from soft drink manufacture to the electronic industry and space technology.

Quality Control and Assurance

Hoechst ensures High Quality Control standards conforming to the rigorous standards of Hoechst AG, Germany.

Basic Research

Hoechst is one of the only three pharmaceutical companies to undertake Basic Research at an annual average cost of Rs. 3 crores. Several exciting new compounds with potential therapeutic value have reached the final stage.

Exports

Hoechst is the leading exporter of pharmaceuticals in India. It has won several prestigious export awards. 1985 exports totalled nearly Rs. 23 crores.

Hoechst looks to the future with confidence and a sense of commitment.

HOECHST INDIA LIMITED **Hoechst**

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Glaxo

Simple preventive measures can help you save on costly cures.

How you can prevent dehydration in children during diarrhoea

Dehydration, which is the result of excessive loss of body fluids during diarrhoea, is a very common ailment among small children. Out of every 1000 infants below the age of 1 year, as many as 125 die every year—dehydration is one of the causes. It can set in very suddenly and its symptoms are severe thirst, very little output of urine, drying up of the mouth and eyes and loss of elasticity of the skin.

Preventive measures should be taken at home, as soon as diarrhoea sets in. Start oral rehydration therapy immediately. Follow either the W.H.O. or ICDDR formulas.

W.H.O. STANDARD FOR ORAL REHYDRATION THERAPY

In 1 litre of boiled cooled water add

Glucose 20 g (or 40 g sugar)

Sodium Chloride 3.5 g (or ½ teaspoon common salt)

Sodium Bicarbonate 2.5 g (or ½ teaspoon soda bicarb)

Potassium Chloride 1.5 g (or a little lemon juice)

Give at least 4-6 glasses a day.

INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH (ICDDR DHAKA) FORMULA

Rice powder—50 g (or 2 heaped tablespoons)

Sodium Chloride—3.5 g (or ½ teaspoon common salt)

Sodium Bicarbonate— 2.5 g (or ½ teaspoon soda bicarb)

Potassium Chloride— 1.5 g (or a little lemon juice)

This is to be dissolved in 1050 ml or just over one litre of water and boiled for 4-5 minutes.

This preparation can be stored for 5-6 hours at room temperature and for 24 hours in a refrigerator.

You can also give the child fluids like weak tea, buttermilk and rice water, where rice is drained off and salt is added to the water

If your child is able to eat, give ripe bananas, soft rice, curds, bread, mashed potatoes and biscuits. Breast feeding should be continued throughout

Contribution of Glaxo to Disease Prevention

- One of the first in the basic manufacture of vaccines (1956)
- Immunisation camps and mobile health service assistance in villages
- Social responsibility cell to promote preventive health measures and public health education
- Audio-visual productions for public health education on TB, xerophthalmia (blinding malnutrition), nutrition, home remedies for diarrhoea and fevers and immunisation.

Write in for a free description leaflet of our audio-visuals

Glaxo—a concern for health

RADEUS/G/1-85

White as new!
POWER PACKED
Surf

Wash after wash... every wash!
Power Packed Surf washes white as new!

Every shirt, every sheet stays as bright, as white, as new as the day you unwrapped it.

Because Power Packed Surf is better than ever before, with a lather richer than before.

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Yes, there's only one powder to keep your whites and coloureds, special and everyday clothes good as new.

Surf

Surf washes whitest... keeps clothes like new!

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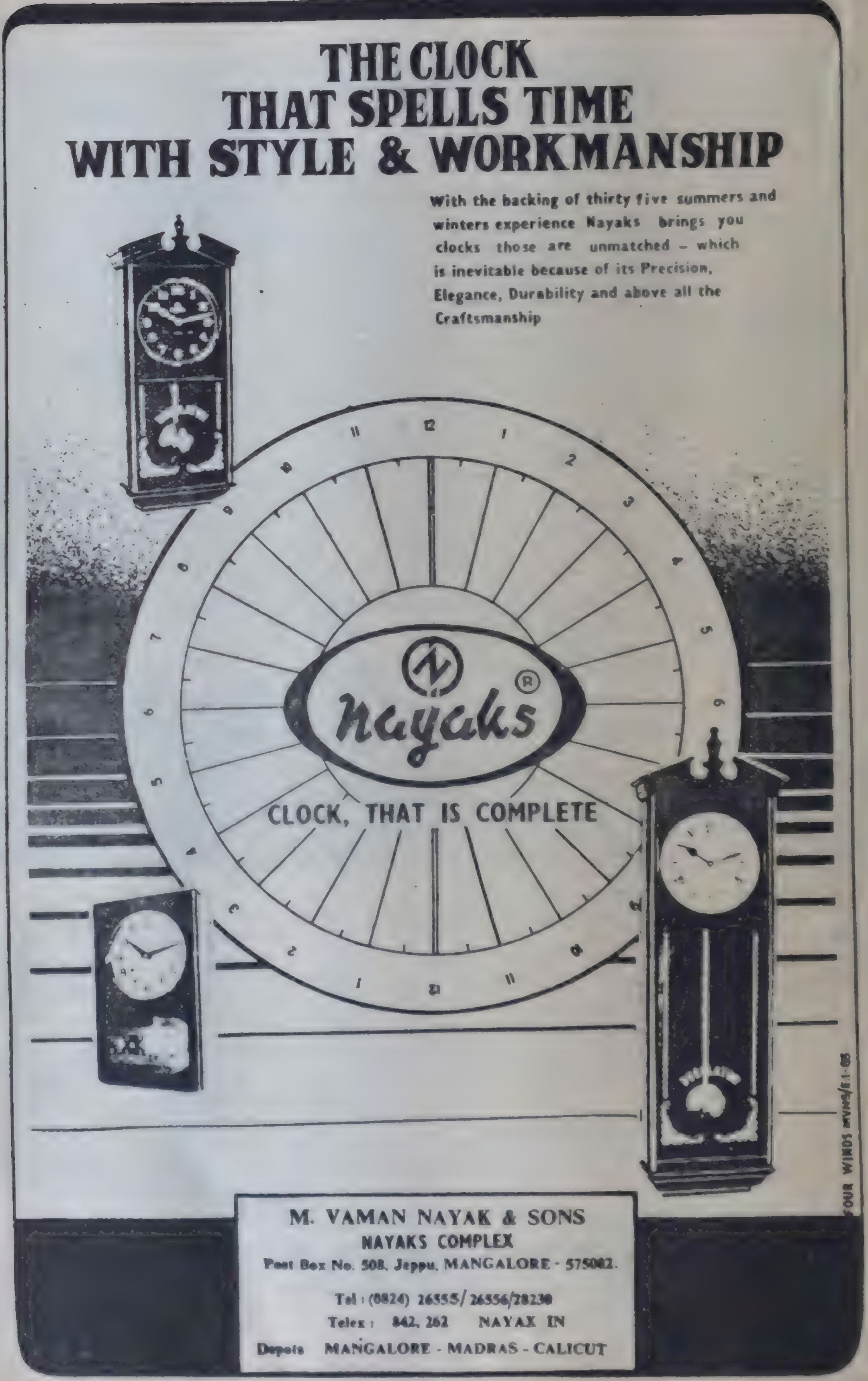
A quality product by Hindustan Lever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WITH STYLE & WORKMANSHIP

With the backing of thirty five summers and winters experience Nayaks brings you clocks those are unmatched – which is inevitable because of its Precision, Elegance, Durability and above all the Craftsmanship

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Light up a tiny world of smoking Luxury.
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No – 30 Beedies reign Supreme in the world of smoking. The originality and richness of Gujarath and Nippani tobacco blended in a most modern plant, rolled into leaves from Orissa and Madhya Pradesh to create a tiny package of unmatched taste.

BHARATH BEEDI WORKS PVT. LIMITED, MANGALORE.

People often turn to him for help. To win finance for a leprosy eradication drive. To find homes for thousands of destitute children. To bring about a change of heart among millions of people at the same time.

Manufacturers and marketing wizards also come to him for help in selling their wares—from computers to nappy pins, and fertilizers to false eyelashes.

Who is he, anyway? This man capable of all these things?

He's the advertising man. The communications expert with a rare gift.

He calls it gut-feel. That special ability to empathise. To be able to experience the feelings of his audience so that the advertisements he creates can evoke the responses he wants from them.

As the country's leading advertising agency, Hindustan Thompson has channelled this rare gift into finding creative solutions to social problems. Into waking people up, goading them to improve their surroundings, changing their attitudes for the better.

We've done it for years. Most times for our clients. Sometimes on our own. Because we feel strongly about something. And every time it gives us a feeling of satisfaction. Which is its own reward.

HTA
Hindustan Thompson
Bombay • Calcutta • New Delhi
Madras • Bangalore

Right now, this man is busy saving 10,000 desperate flood victims.

In the field of power

Hindustan Brown Boveri Limited (HBB) has been creating technological history in India. Quietly.

For instance, they made India's first 400 kV Airblast Circuit Breaker, the country's first Power Line Carrier Communication Equipment (PLCC), the country's largest Arc & Induction Melting Furnace. And many more.

World leading technological knowhow from its collaborators, BBC Brown Boveri of Switzerland, has given the company its technical advantage. But it is the belief in, and the pursuit of, excellence that has taken the Indian Company a little ahead of the others.

Power Equipment Division

- Outdoor Airblast Circuit Breakers upto 420 kV
- Outdoor SF_6 Circuit Breakers upto 420 kV
- Outdoor Current Transformers upto 420 kV
- Outdoor Capacitor Voltage Transformers upto 420 kV
- Outdoor Isolating Switches upto 420 kV
- 25 kV Traction Duty Airblast Circuit Breakers
- Indoor Airblast Circuit Breakers
- Switch Board and Panel Boards
- Isolated/Segregated Phase Busducts
- High Voltage Minimum Oil Circuit Breakers
- On Load Tap Changers for 25 kV AC Locomotives.

Relay and Protection System

- Inverse Time Over Current Relays
- Auxiliary Relays
- Comprehensive Motor Protection Relays
- Differential Relays
- High Speed Distance Relays
- Generator Protection System
- High Speed Bus Protection System

Electronics Division

- Power Line Carrier Communication Equipment
- Telemetering Equipment
- FM-VFT Channels for Teleprinters and Overseas Communication Service
- Transducers
- Micro-Processor-Based Systems

Project Engineering Division

HBB's Project Engineering Division has full capabilities to design, engineer, fabricate, supply, install and commission complete electrical installations for power utilities and industries including high voltage substation, medium and low voltage distribution systems, thyristor control drives, supervisory remote control & monitoring systems and solar systems.

Backed by over 20 years of experience in the field of power, HBB is undertaking projects even abroad singly or jointly with other partners.

Furnaces

- Arc Melting Furnaces
- Heat Treatment Furnaces
- Mains Frequency Coreless Induction Melting Furnaces
- Mains Frequency Channel Induction Furnaces
- Medium Frequency Coreless Melting Furnaces
- Mains Medium and Radio Frequency Induction Heating Furnaces
- Dielectric Heating Furnaces
- Cremation Furnaces

Rotating Machinery Division

HBB Motors cover a wide range from 0.5 to 340 HP in TEFC and SPDP design

- Textile Motors
- Motors for Machine Tool Applications
- Increased Safety Motors
- Marine Motors
- Motors for Agricultural Applications

Exhaust Gas Turbochargers

The present range is suitable for application on diesel engines (above 250 HP and upto 2000 HP) of marine traction and captive power applications. HBB also markets and services BBC Exhaust Gas Turbochargers in India.

Research & Development

R&D centres set up in 1976 where creative innovation is the cornerstone of development.

Imports

HBB imports products manufactured by BBC Brown Boveri and Company Limited, Switzerland and their associated companies in West Germany, France, Italy, Austria and Norway.

Import of Equipment in the field of:

- Power Generation
- Power Distribution
- Power Utilization
- Transport
- High Frequency Communications
- Special Products

Member CEI formerly AIEI

BBC
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PREMIER
TYRES

Built stronger
to last longer

Adept-PT-160

Finding inspiration in tradition

The Rallis emblem.
The letter 'R' is enclosed within the circular motif of a two-headed serpent which represents the staff of Hermes, the Greek god of commerce and prosperity. Traditionally, in India, the circle is the symbol of perfection, and the serpent, wisdom, eternity and good fortune. The Rallis emblem thus symbolises the confluence of Indo-Greek wisdom that, today, leads to a better life for everyone

The philosophy of growth

In the timeless traditions of India, we find an expression of our dream.

A dream that's fundamental to our evolution in various spheres of enterprise.

Enterprise that makes life a little better for people in all walks of life. With modern, affordable products and services.

Whether it's fertilisers or pesticides, home appliances or vital drugs, portable tools or exports, we strive to ensure that they offer the best value for money.

That we are growing rapidly in every area of activity, speaks for our success.

But our own satisfaction lies elsewhere It's in the appreciation of the 24 fold increase in the national household physical assets from Rs. 422 crores in 1950-51 to Rs. 10,240 crores in 1984-85. And of the three-fold increase in the private consumption expenditure, from Rs. 14,708 crores to Rs. 47,149 crores during the same period

With every passing day, the quality of life is getting better. The future is full of promise

For growth is achieved by fulfilling the needs of the people and by making their lives that much better

It's a better life with Rallis

RALLIS
Multi-Technology Group

Agrochemicals
Consumer Durables
Engineering
Fine Chemicals
Pharmaceuticals
Exports

[illegible] 1987 M

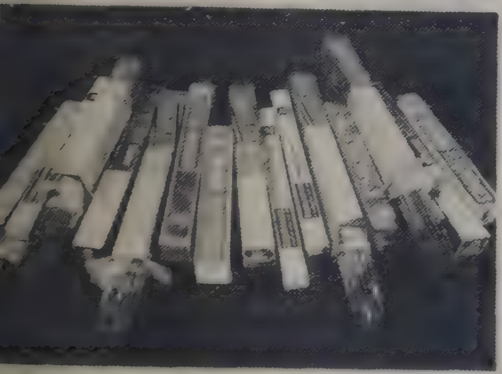
Here's a handy encyclopaedia of the Advani-Oerlikon range of products and services

A range that meets the most stringent quality standards and optimises productivity in a variety of operations — from welding, metal working and metal fabrication, industrial and power electronics to process control instrumentation and allied fields.

VELDING CONSUMABLES

lanual metal arc welding lectrodes

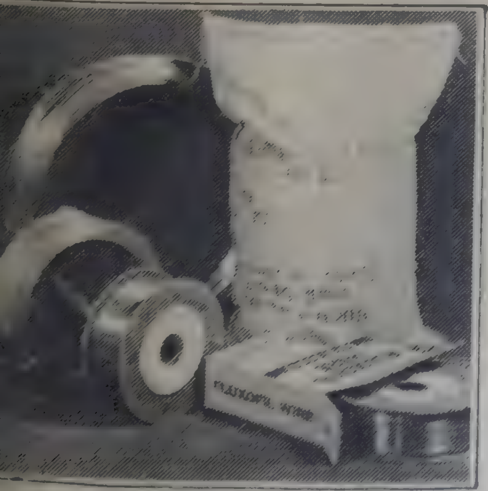
or mild steels ■ Low alloy and high ensile steels ■ Hardfacing applications Stainless and heat resisting steels ■ lon-ferrous metals ■ Cast iron.



rc welding electrodes

Vire-flux combinations

or submerged arc welding ■ Solid and ux-cored wires for gas metal arc elding ■ Open arc flux-cored wires ■ ller wires and rods for gas tungsten arc elding

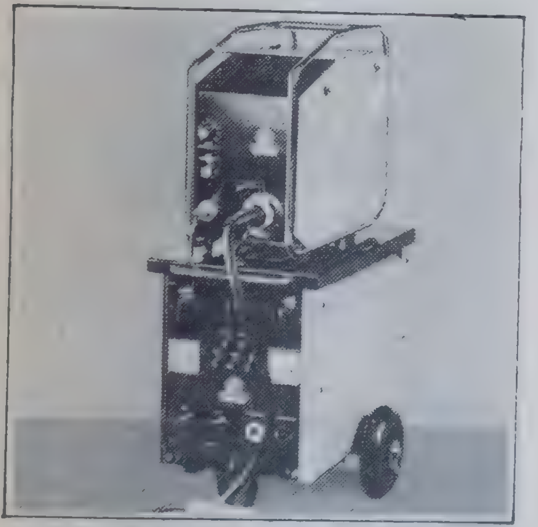


re Flux combinations

erlikon-Fon Low Heat Input elding Alloys

WELDING EQUIPMENT & SYSTEMS

Air & oil cooled welding transformers ■ Motor generator welding sets ■ Rectifier type DC welding power sources ■ Internal combustion engine driven welding sets ■ Resistance welding equipment ■ Pulsed TIG welding outfits ■ Gas tungsten arc welding equipment including AC/DC composite outfits ■ Plasma arc cutting-cum-TIG welding outfits/Micro-plasma arc welding equipment ■ Gas metal arc (MIG/MAG) welding equipment ■ Submerged arc welding outfits



MIG/MAG Welding outfit

Welding Aids

Columns & booms ■ Rotators ■ Positioners ■ Weld seamers

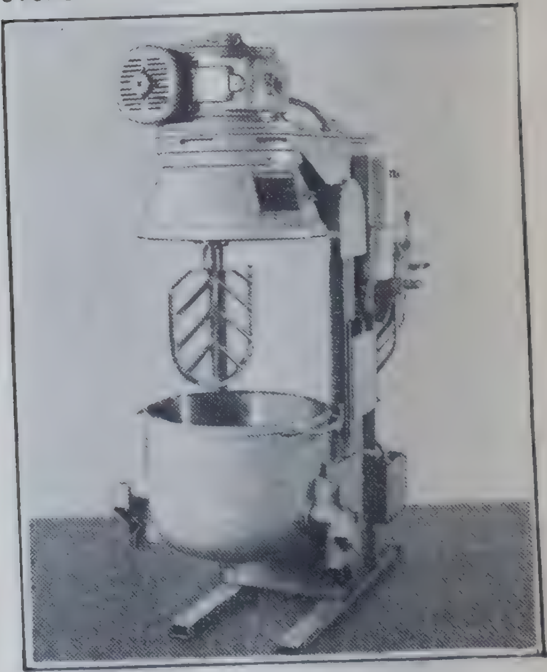
Special Purpose & Custombuilt Welding Equipment & Systems

Automatic yoke welding equipment ■ Axle welding machines ■ Roll rebuilding machines ■ Custombuilt and turnkey welding systems against specific orders

Pre-weld and Post-weld Heat Treatment Equipment

WELDING ELECTRODE MANUFACTURING EQUIPMENT

Vertical & horizontal type hydraulic welding electrode extrusion presses ■ Fully automatic high-speed wire straightening and cutting machines ■ Hydraulically operated slug presses ■ BML brushing machines and PCL pick-up conveyors ■ Hydraulically operated planetary wet mixers ■ Stationary high temperature electrode drying and baking ovens

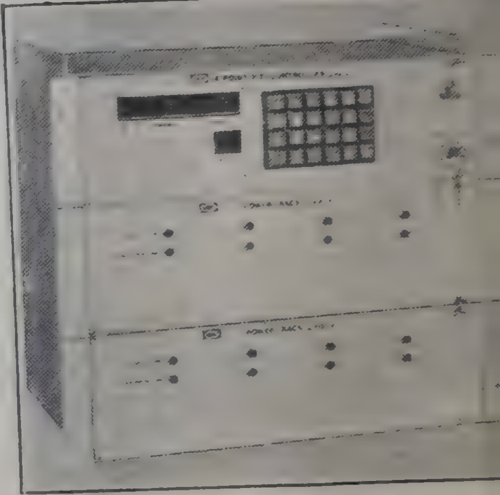


Planetary wet mixer

INDUSTRIAL & POWER ELECTRONICS, PROCESS CONTROL EQUIPMENT

Thermometry Instruments

Temperature indicators ■ Blind temperature controllers ■ Temperature indicating controllers ■ Digital thermometers ■ Digital temperature indicating controllers ■ Temperature scanners (analog versions) ■ Digital temperature scanner ■ Thermoscan with printer ■ Mobile scan — scanner for mobile applications ■ Thermophase – solid state furnace controllers ■ Universal programmers ■ Microprocessor-based data scanners Motor temperature monitors



Microprocessor– based temperatur scanner

DC Machines & Power Contro Equipment

Data logger

Solid state thyristor drives for all applications ■ Tachogenerators ■

voltage rectifiers and controllers for electrostatic precipitators ■ DC motors ■ Battery chargers ■ Float chargers ■ Custombuilt transformer-rectifier equipment ■ Furnace transformers ■ High frequency convertors ■ Electroplating rectifiers ■ Dry type transformers/rectifier units ■ DC generators ■ Thyristor convertor systems (consisting of DC thyristor convertor panels, DC motor and tachogenerator) ■ Custombuilt DC motors ■ Custombuilt rotary machines ■ Reactors ■ Variable speed AC motor drives

Microprocessor-based Instruments

Data loggers ■ Programmable logic controllers ■ Microprocessor-based temperature scanners

Annunciator Panels

Alarm annunciator panels ■ Digital sequential alarm annunciator panels

BUSINESS EQUIPMENT

Panaprint automatic copiers ■ Panaprint collators ■ Dictation systems

ACTIVE AND PASSIVE ELECTRONIC COMPONENTS (Manufactured by Semiconductors Ltd.)

Semiconductor Devices

Germanium transistors ■ Germanium diodes ■ Silicon transistors ■ Field effect transistors ■ Uni-junction transistors ■ Silicon diodes ■ Silicon zener diodes ■ Silicon photodiodes ■ Silicon rectifiers ■ Silicon controlled rectifiers ■ Triacs ■ Diacs ■ Silicon bridge rectifiers and stacks ■ Linear integrated circuits ■ Digital integrated circuits

Electroceramic Products (Manufactured by Advanced Magnetics Ltd.)

Loudspeaker magnets ■ Ferrite rods ■ Balun cores

SERVICES

Agencies

For products to be imported against actual users' licences from U.K., U.S.A., Canada, Japan, West Germany, France, Italy, Belgium, Austria, Sweden, Switzerland, Netherlands, etc.

Business Equipment

Bell & Howell range of microfilming equipment, large size MEPs ■ Shacoh drawing office plain paper copiers.

Welding Consumables and Equipment

Complete range of welding consumables, equipment and allied products including electron beam welders, orbital TIG welders, synergic pulsed-MIG equipment, flame and gas cutting machines.

Machine Tools

Precision, heavy duty and numerically controlled machine tools for machining, milling, grinding, cutting and shaping, metal spraying

Induction heating generators, vacuum furnaces, equipment for shot blasting, machinery for woodworking, decorative and industrial laminate making, equipment for shipbuilding, offshore drilling, navigation and communications, supervisory control and data acquisition, telemetry and telecontrol systems, equipment specially designed for work underwater, etc.

Ferro Alloys

Special ferro alloys, deoxidation alloys, hard metals, aluminium grain refiners, modifiers, hardeners, ladle metallurgy systems , etc.

Also arranging technical know-how and collaborations for manufacture of ferrous and non-ferrous metals and alloys.

Plessey Semiconductors (U.K.) — Micro-circuits

High performance linear integrated circuits ■ Radio communication ICs ■ Telephone communication circuits ■ Standard ECL III ■ Sub-nano second ECL ■ High speed comparators ■ Data conversion circuits ■ Digital high speed dividers ■ Data communication circuits ■ N-channel MOS PCM circuits ■ C-MOS telecommunication circuits ■ Television circuits. Zero voltage switches/Phase control power switches

Plessey Optoelectronics and Microwave Ltd. — Optoelectronics & Microwave devices

Optoelectronics

L.E.D. sunlight visible displays ■ Fibre optic products ■ High power infra-red emitters

Fast response near infra-red photodiodes ■ Pyroelectric infra-red detectors ■ Detectors for gas analysis ■ Pollution monitors and fire alarms ■ Detectors for intruder alarms ■ Detectors for laser pulse detection ■ Pyroelectric ceramic detector arrays ■ High power infra-red emitters

Microwave devices

Gunn diodes ■ CW and pulsed Gunn oscillators ■ Doppler modules and detectors. CW impatt oscillators ■ GaAs FET amplifiers ■ Low noise amplifiers

Ador Consultants

Computer services — systems design & data processing ■ Conducting industrial engineering studies ■ Preparing project reports ■ Providing technical know-how ■ Selecting personnel. Conducting training programmes

Panagraphics Microfilming Service

Welding Technology Centre

Imparting education in welding technology ■ Qualification of welders ■ Welding refresher courses

Pre-weld and Post-weld Heat Treatment Services

Technical Service

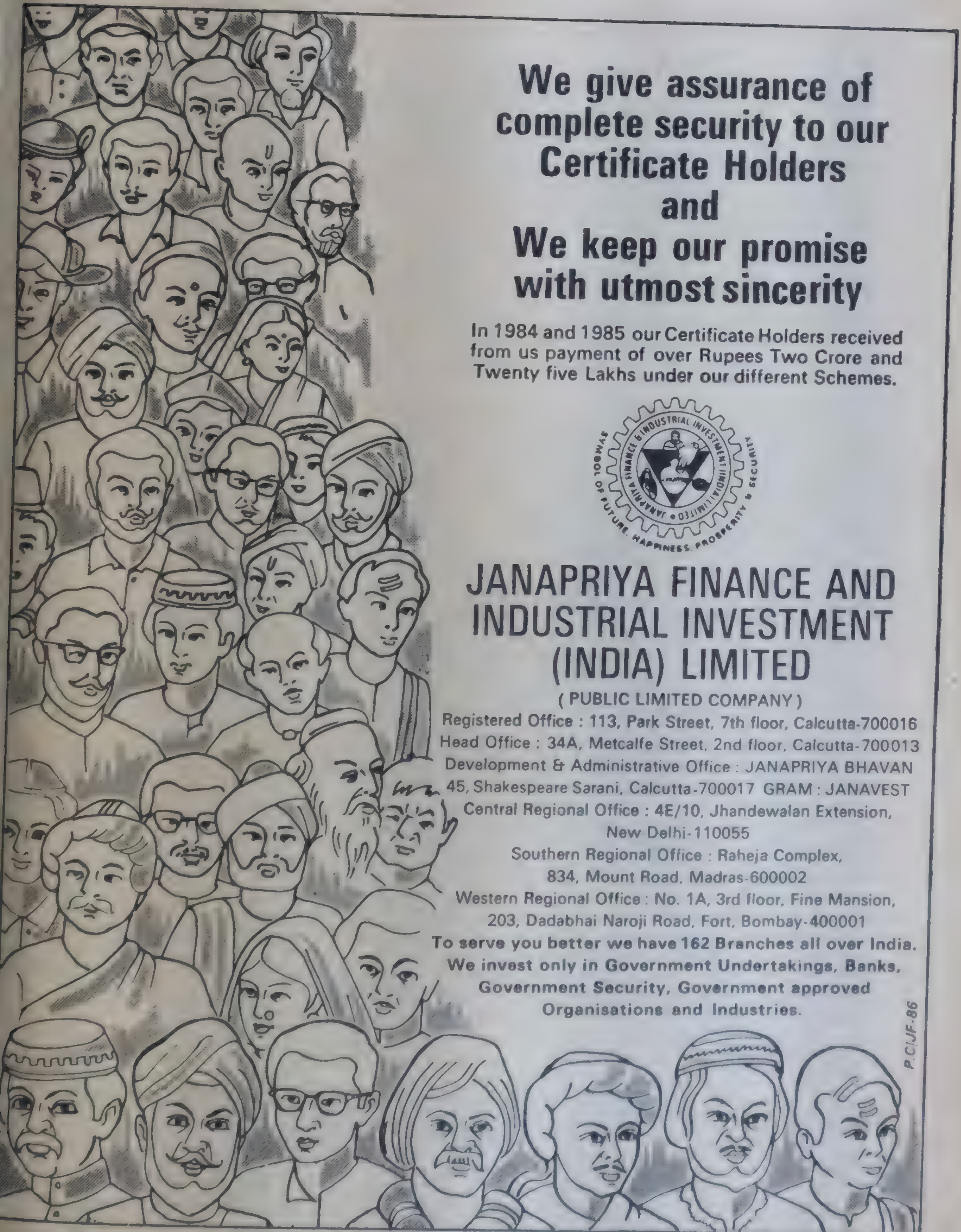
Free advice to metal fabricators on welding problems and on the right selection of welding consumables and equipment

Ador Service

Preventive maintenance service for various welding equipment and custombuilt welding systems.

ADVANI-OERLIKON LIMITED

H.O. : Ador House, 6, K. Dubash Mar
Bombay-400 023.



We give assurance of complete security to our Certificate Holders and We keep our promise with utmost sincerity

In 1984 and 1985 our Certificate Holders received from us payment of over Rupees Two Crore and Twenty five Lakhs under our different Schemes.

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Development & Administrative Office : JANAPRIYA BHAVAN
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Central Regional Office : 4E/10, Jhandewalan Extension,
New Delhi-110055
Southern Regional Office : Raheja Complex,
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Western Regional Office : No. 1A, 3rd floor, Fine Mansion,
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To serve you better we have 162 Branches all over India. We invest only in Government Undertakings, Banks, Government Security, Government approved Organisations and Industries.

P.C/JF-86

This too is Voltas.
VOLTAS
P&H

Technology transfer—to bring you the best in the world

Voltas is implementing a programme of technology transfer. The objective is to bring the best of products and processes for the benefit of industry and agriculture. The sophisticated SF 6 circuit breaker which Voltas manufactures in collaboration with Merlin & Gerin of France is a case in point The Voltas P & H Omega crane made in collaboration with Harnischfeger of the USA, a world leader in crane technology, will help speedy implementation of very large national projects. Volrho is yet another example. Voltas has promoted this Rs. 17 crore enterprise in the core sector to produce agro-chemicals in association with Rhone-Poulenc, the largest chemicals group in France. Technology transfer is a major example of the multi-dimensional activities of Voltas.

Voltas is what it has to be. An extensively diversified business to satisfy the essential needs of society. It believes excellence in performance is an achievable virtue

Operating Divisions
Agro-Industrial Products
Airconditioning & Refrigeration
Appliances
Chemicals
Electricals
Industrial Machinery
Machine Tool & Materials Handling
Mining & Construction Equipment
Pharmaceuticals & Consumer Products
Project Engineering
Textile Machinery

VOLTAS *Development through diversity*

ULKA-V-5-83

You'll find us all over India!

Today with several offices all over India, HDFC is giving housing finance a living shape for all kinds of people everywhere

in 1977 HDFC started out with a handful of staff and an office in Bombay. The mandate was clear to develop the concept of housing finance as an integral part of the country's development; manage it on modern, professional lines; and most important of all, make housing finance easily available to people all over India.

Today, with several offices spread through the land. We stand committed as an all-India institution catering not only to individuals in over 400 towns and cities, but also to co-operatives and backward areas.

HDFC also helps defence personnel and other institutions through specially designed housing loan facilities. Everyday, in different ways, HDFC is introducing housing finance to our people, wherever they may be.

HOUSING DEVELOPMENT FINANCE CORPORATION LIMITED

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Branch Offices Ahmedabad, Bangalore, Bhubaneswar, Bombay (Parel), Calcutta,
Cochin, Guwahati, Hyderabad, Indore, Jaipur, Lucknow, Madras New Delhi, Pune

ADROIT 11 86 R

EXPORTS & IMPORTS
GLOBAL SERVICES
by SCI Line

The largest national Flag Line of India today operates a network of world wide cargo liner services (both container and break bulk) to assist and promote nation's international sea-borne trade.

CONTAINER SERVICES

- U.S.A.-CANADA
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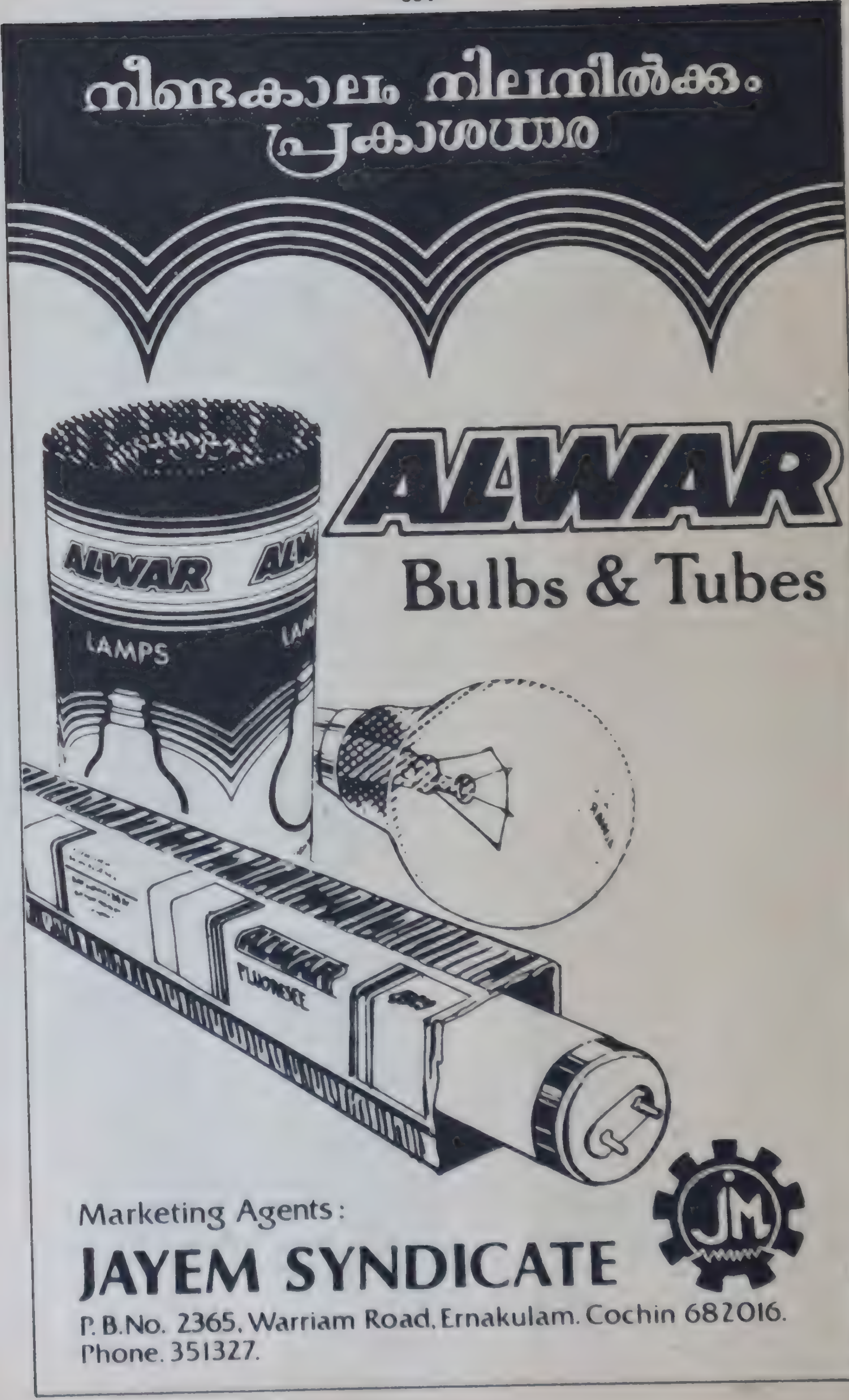
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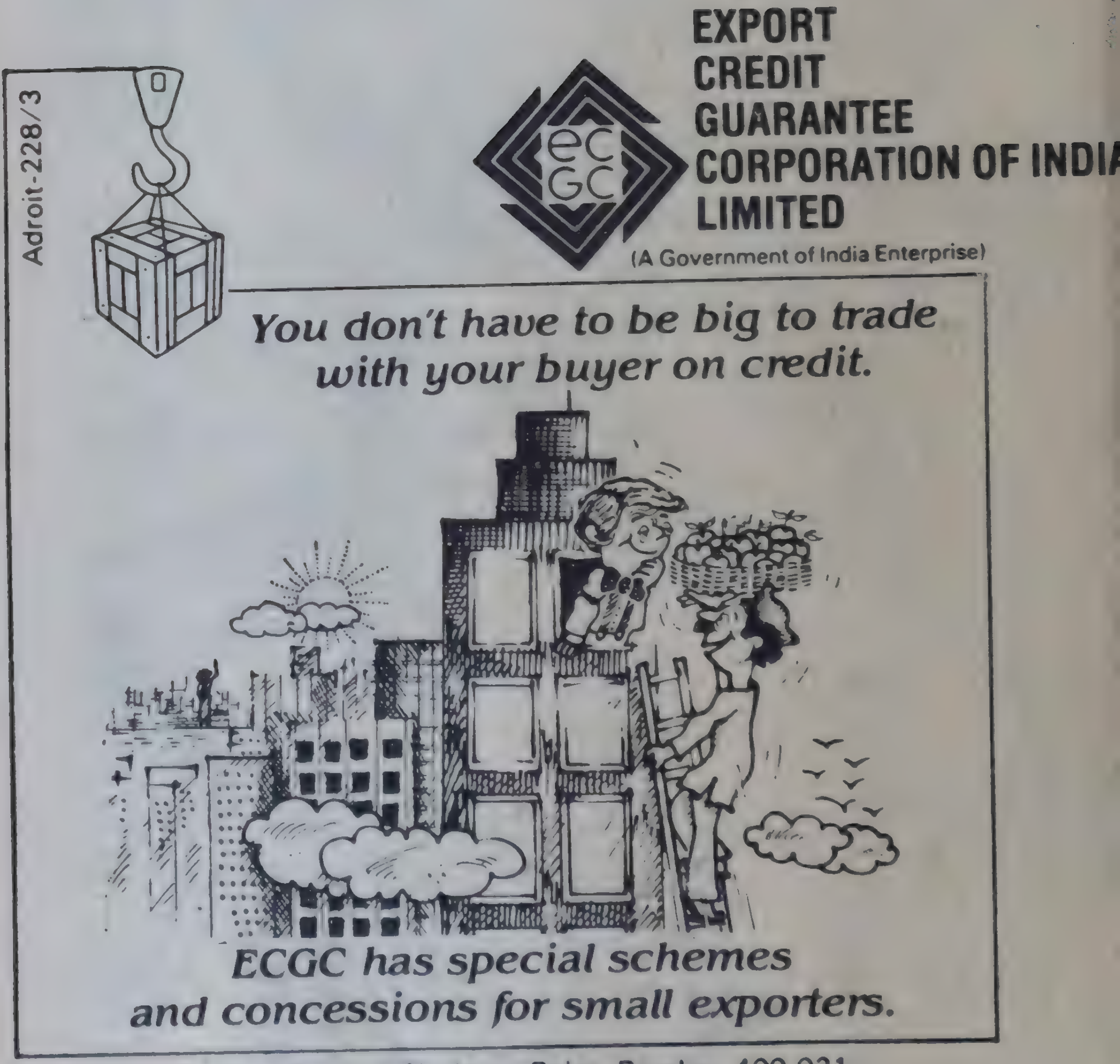

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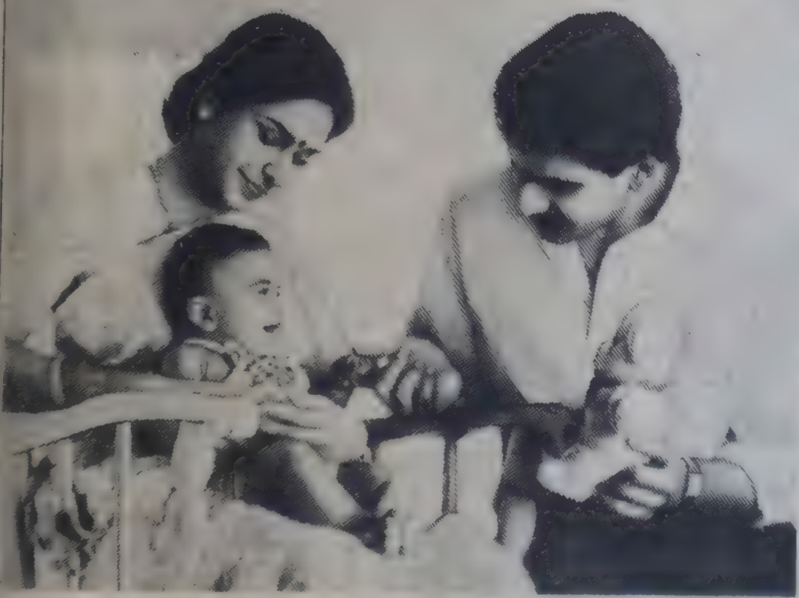

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Amount to be invested at different ages to get Rs.12,000 at the age of 21 years.

Age (Years)	Amount* (Rs.)	Age (Years)	Amount* (Rs.)
At birth	1,000	8	2,600
1	1,200	9	2,900
2	1,300	10	3,300
3	1,500	11	3,700
4	1,600	12	4,100
5	1,800	13	4,700
6	2,100	14	5,200
7	2,300	15	5,900

*Amount to be invested rounded off to the nearest Rs.100

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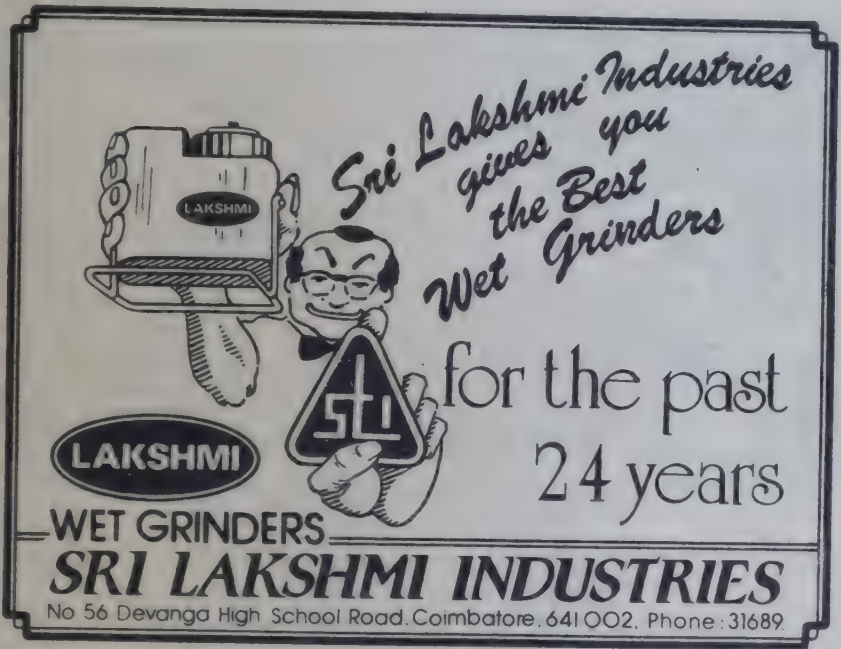

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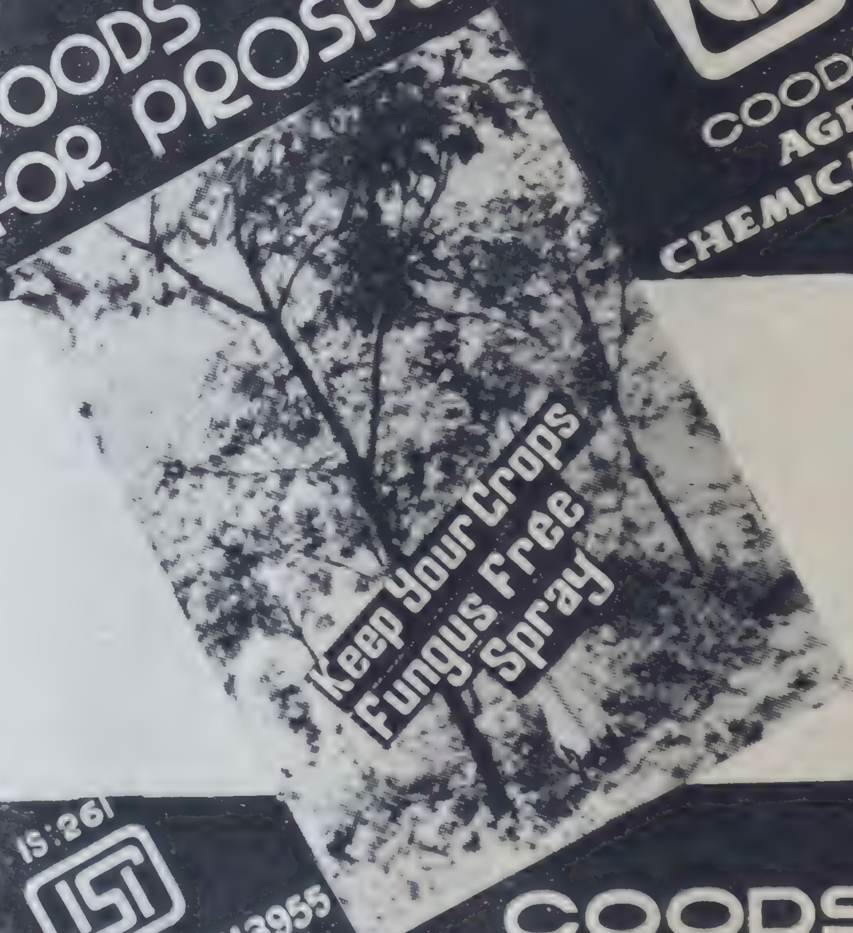
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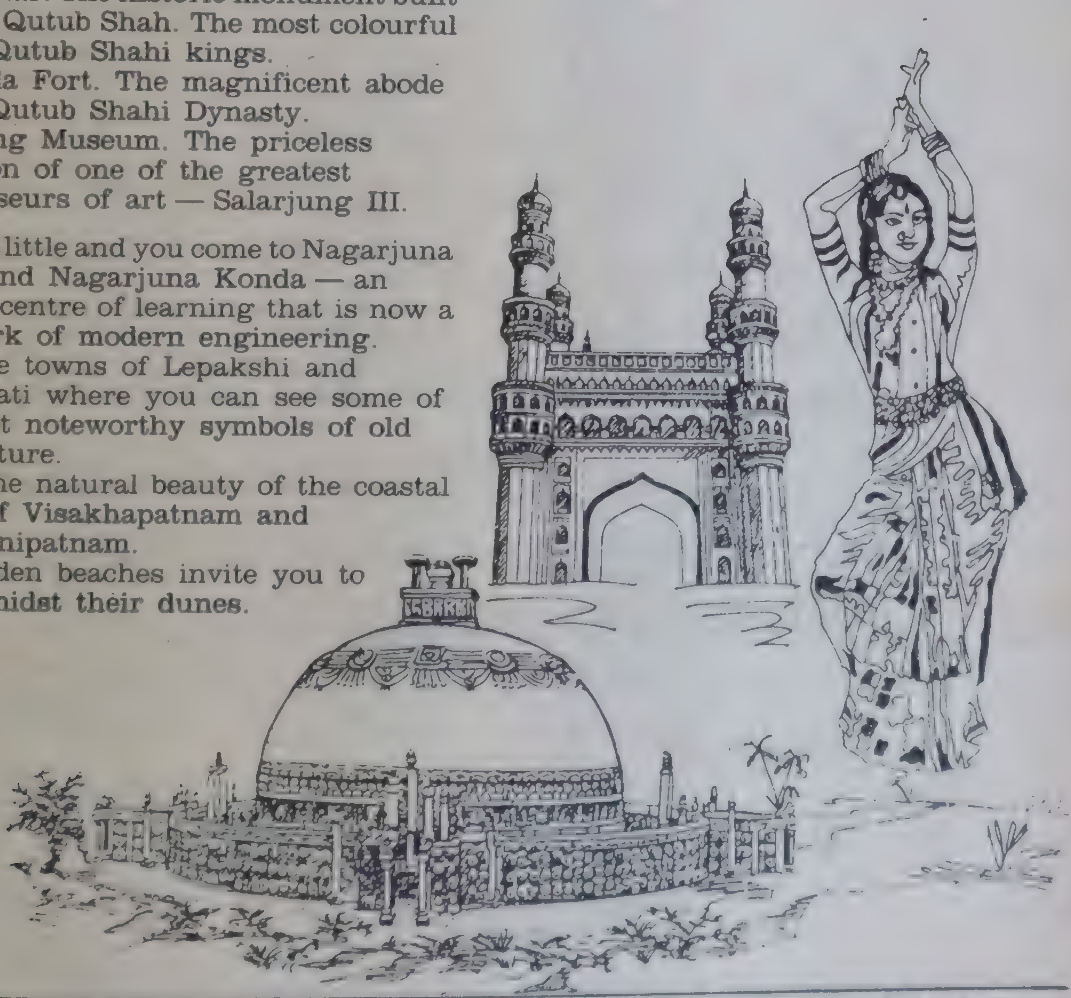

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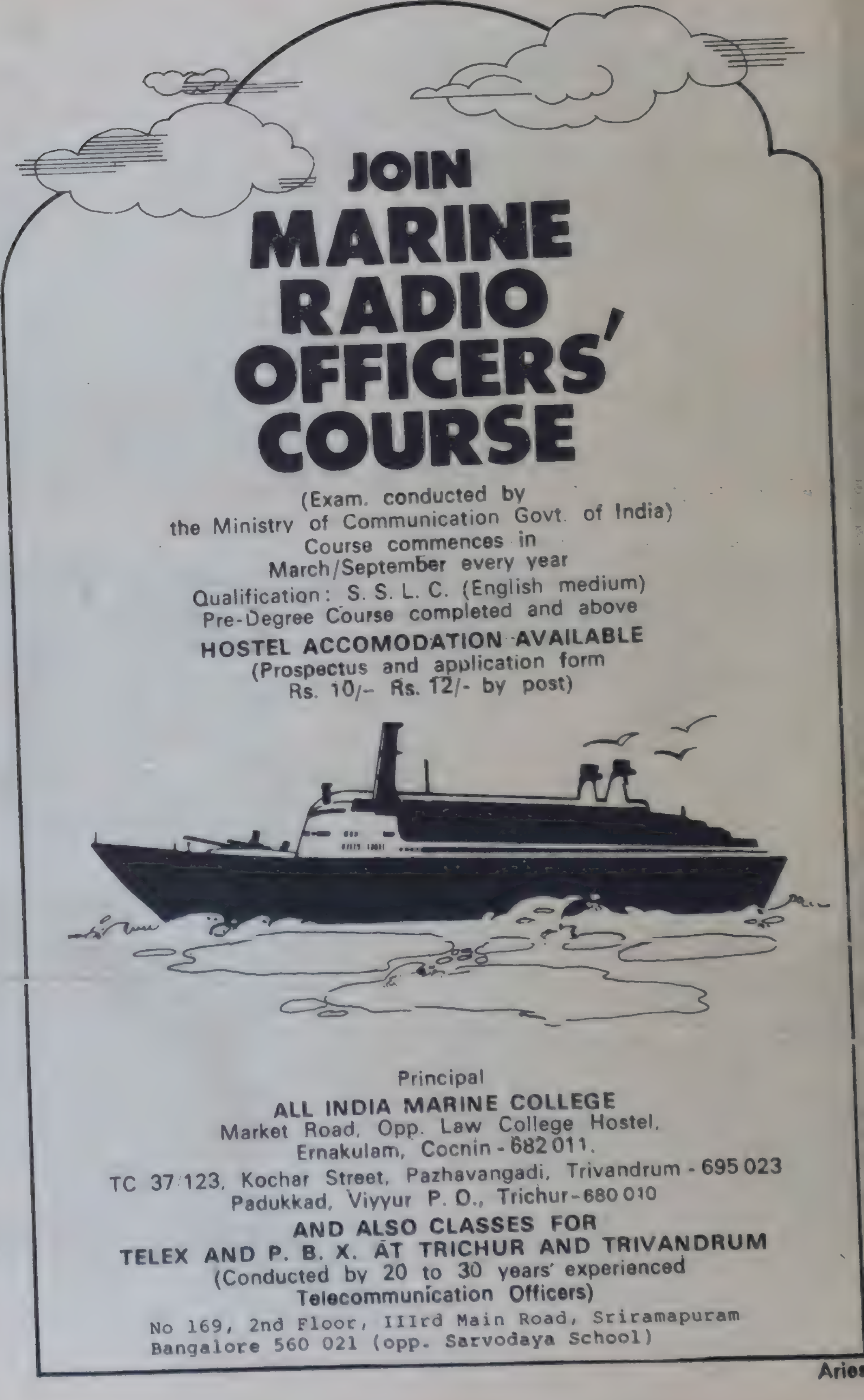

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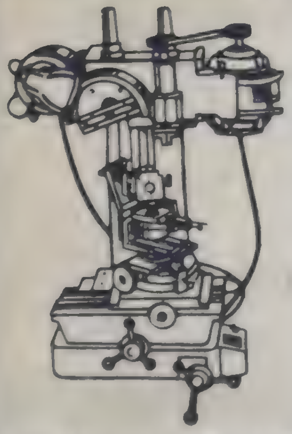

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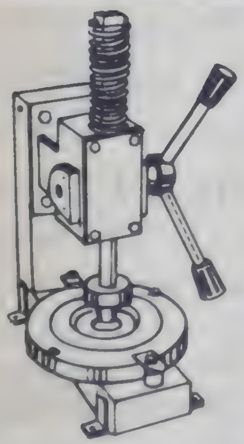

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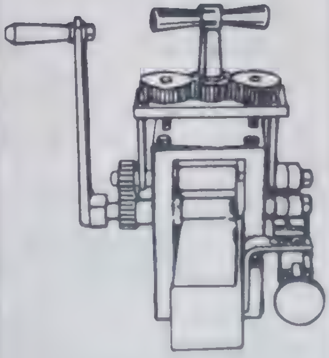

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Science 1986

- Archaeologists claimed the discovery, in north-west China, of a concrete floor dating back to 5,000 years before present. This is considerably before concrete began to be commonly used.
- The world's oldest library, containing more than 1,00 cuneiform-written clay tablets, was discovered near Baghdad in Iraq.
- The world's population crossed the five billion mark in 1986.
- A new three-dimensional map of the universe shows it to consist of gigantic 'bubbles' with the stars and galaxies being located on the surfaces of the bubbles.
- Using the European Space Agency's X-ray Observatory Satellite (EXOSAT) astronomers discovered a pair of stars that circle each other in just 11 minutes. This is considerable less than the shortest period of 46 minutes known befre the present discovery.
- A team of astronomers discovered a quasar which, lying at a distance of about 90 per cent of the way to the edge of the observable universe, is the most distant object ever discovered. Quasars are galaxies with an exceptionally bright and compact centre.
- The Voyager-2 spacecraft flew past Uranus, detecting six new moons of the planet. It also detected radio emissions from Uranus, suggesting that the planet probably has a magnetic field.
- Evidence was presented supporting the existence of a fifth fundamental force of nature. At present only four fundamental forces are known, namely, gravity, electromagnetism, strong force, and weak force.
- Elephants were discovered to use sound waves in the range of 14 to 25 cycles per second for communication. Such low frequencies are inaudible to the human ear.
- The U.S. Department of Agriculture granted the world's first license to a company to market a living, genetically altered virus. The virus, which is used to make a vaccine for preventing a herpes disease among swine, has already been field-tested.

- The U.S. Department of Agriculture granted the world's first license to a company to market a living, genetically altered virus. The virus, which is used to make a vaccine for preventing a herpes disease among swine, has already been field-tested.

- In the past few years scientists had discovered about 30 genes that can cause cancer. Now for the first time a gene has been found that does the opposite—it helps to prevent the formation of a certain type of human cancer.
- Medical scientists claimed the discovery of an abnormal gene that is responsible for some forms of heart disease. Thus theories that there exists a hereditary component to heart disease have received a boost. Such abnormal genes may in future help to identify people with risk of heart trouble.
- A nine-year-old Brazilian girl gave birth to a baby by Caesarian operation.
- In the U.S., a woman was sentenced for having caused the death of her one-month-old baby because during her pregnancy she took drugs against medical advice. The baby boy was bron with severe brain damage and had traces of amphetamines in his system.
- Elevated concentrations of Aluminium in the brain were linked as causative agents of the dreadly Alzheimer's disease. This afflicts mostly old people and is characterized by worsening dementia and eventual death within 3 to 10 years.
- Although a new drug called Azidothymidine (AZT) offered some hope for AIDS patients, mostly the disease remained unabated in western countries. Realizing its serious threat, a special high-power committee consisting of Cabinent ministers was appointed in the United Kingdom to make decisions on how to contain the disease. In India, the first death due to AIDS was reported.
- A new pain-killing cream is likely to ameliorate the fear of injections among people, specially children. The anaesthetic cream is applied to the skin area to be pricked and left for an hour. The patient then feels no pain when injected with a needle.
- In their continuing efforts to harness nuclear fusion energy, researchers produced a temperature of 200 million degrees Celsius. This is the highest temperature every produced in a laboratory and is ten times hotter than the centre of the sun.
- British inventors revealed a new computerized device that can directly read fingerprints and compare them with other fingerprints already existing in its memory. They indicated that commerical use as part of a doorlock may just be a year away.
- American and European plans were revealed for new types of hypersonic space planes that will be able to fly at speeds upto twenty-five times the speed of sound. These planes, expected to become operational by the late 1990's, will cut down the flying time between any two points on earth to less than two hours.

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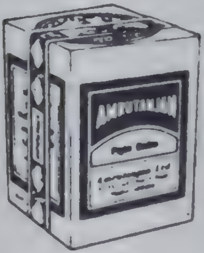
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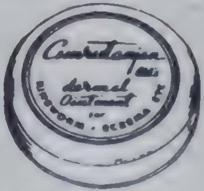
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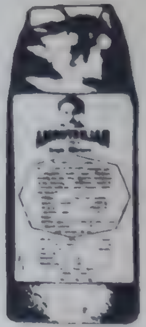
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India has 24 States now

With Arunachal Pradesh being accorded full statehood, the number of states in the Indian Union has risen to 24 and the number of union territories has been reduced to 7.

Arunachal was accorded the honour closely on the heel of Mizoram becoming a full state following the passage of Constitution Amendment number 53.

The constitution Amendment bill proposing full statehood to Arunachal Pradesh was introduced in the Lok Sabha on December 5, 1986.

The Constituion (fifty-fifth amendment) Bill sought to insert a new Article 371-H vesting the Governor of Arunachal Pradesh with "special responsibility" with respect to law and order to be discharged after consulting the Council of Ministers. The new Article provided also for a legislative Assembly consisting of not less than 30 members.

A companion bill titled "the State of Arunachal Pradesh Bill 1986" sought to effect the consequential amendments to the first and fourth schedule of the Constitution, provide for delimitation of constituencies, amendments to the scheduled Castes and Scheduled Tribes orders and other legislation.

Ambedkar Centenary

Preparations are already afoot to celebrate the birth centenary of one of India's great sons—Dr. B. R. Ambedkar.

Bhimrao Ramji Ambedkar, the untouchable who rose to become the architect of India's constitution was born on April 14, 1893.

In New Delhi, the Ambedkar Centenary Celebration Committee announced the institution of one international and five national awards for "extraordinary work done for the amelioration of the poor and down-trodden."

The meeting chalked out programmes to popularise Dr. Ambedkar's message through symposia, conferences, public meetings, besides organising matches of Ambedkar jyoti from different parts of the country to culminate in a centenary gathering at the boat club lawns.

It also proposed to establish a university of law and justice and an international research centre in the name of Dr. Ambedkar, besides publishing his works in all regional languages.

It was decided to collect Rs. one crore through donations for this purpose.

The State council of the Kerala State Harijan Samajam, which met at Alwaye decided to celebrate the birth centenary of Dr. Ambedkar.

Emotions Recollected: Mrs Savitha Ambedkar addressing a memorial meeting revering her husband Dr. B.R. Ambedkar in Cochin, December last.

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The seventh world Sanskrit conference is scheduled to open there on August 23, 1987. The prestigious Kern Institute of the Leiden University, which sponsored the previous conferences has elaborate plans for the largest gathering of Sanskrit scholars from around the globe.

Leiden on the North Sea coast is a little town between Amsterdam and Rotterdam.

Writers and Artists Honoured

The sitar maestro, Pandit Ravi Shankar, novelist R. K. Narayan, and artist, M. F. Hussain are among the five new members nominated to the Rajya Sabha in May 1986 by the President on the recommendation of the Government.

The other two are the Punjabi poetess Amrita Pritam and the social worker Mrs. Ela Ramesh Bhatt.

These nominations have been made to fill the vacancies caused by the retirement of Mr. Lokesh Chandra, Mr. Sivaji Ganesan, Mr. Khushwant Singh and Mr. Scato Swu on the completion of their terms, and the resignation of Air Vice-Marshal H. L. Kapur following his appointment as Lt. Governor of Delhi.

But these nominations have been welcomed generally because the Prime Minister, Mr. Rajiv Gandhi, has made a healthy departure from the earlier practice of accommodating politicians who could not be provided elsewhere and adhering to the true spirit of the constitutional provision that men and women of eminence who have made a mark in different spheres should be chosen so that they could make some valuable contribution during the debates and let their fellow members have the benefit of their wisdom and experience.

The Prime Minister has also utilised this opportunity to assuage the feelings of his party colleagues who have been compalining that he was displaying undue preference in selecting persons from the corporate sector, the film world and even the civil services for dispensation of official patronage. And the latest nominations to the Rajya Sabha have been made with great care to rebut this accusation by choosing a set of persons who are eminent in their own right.

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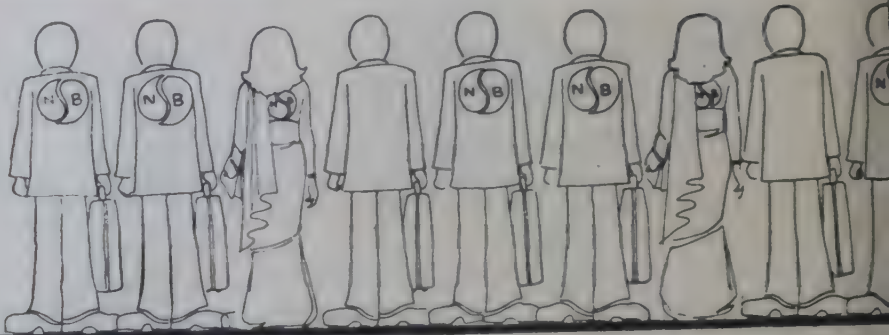

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If anybody dreams of the exclusive survival of his own religion and the destruction of the others, I pity him from the bottom of my heart and point out to him that up on the banner of every religion will soon be written, inspite of his resistance: 'Help and not fight', 'Assassination and not destruction', 'Harmoney and peace and not dissention!'

—Swami Vivekananda from his address at the Parliament of Religions, Chicago, 1893.

Arise, Awake and Stop not...

This year marks the 125th birth anniversary of Swami Vivekananda, one of the two great men of modern India through whom the world came to know the psyche of the Indian society, its tradition, culture and philosophy.

Born on 12 January 1862 to religious-minded Hindu parents he was christened Naredranath and brought-up in the best of Hindu culture. Quite well-versed in the Hindu philosophy and theology he was educated at a western style university. This enabled his independent mind to have an encounter with western philosophy, - Christianity and Science

He became disciple of Ramakrishna Paramahamsa in 1881 and founded the Ramakrishna Mission. He travelled throughout India as a mendicant to understand and to register in his mind the profound as well as sordid aspects of human life in the country. His pilgrimage ended at Kanyakumari where he swam across the sea and sat on the now famous Vivekananda rock to meditate

He realised that to labour for the benefit of man was the noblest endeavour and stressed the point that religion is an instrument of positive social action. In 1893 he addressed the World Parliament of Religions in Chicago and electrified the West with his soul-stirring speech on vedantic religion. He said, "If one religion be true, then all others must be true". This great man who believed in service rather than dogma died on Jan. 4, 1902, leaving behind him the mesmeric call: "Arise, Awake, and stop not till the goal is reached"

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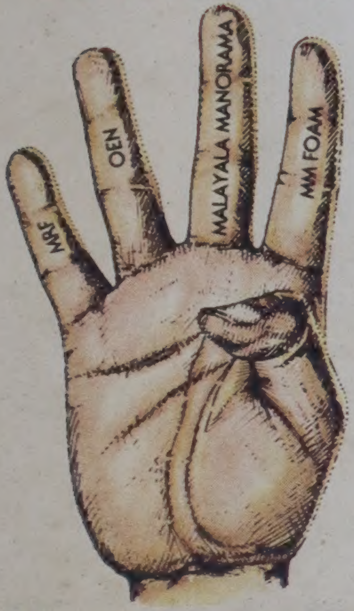

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